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|  | **UNIVERSITAS SUMATERA UTARA (USU)**  **FAKULTAS TEKNIK**  **DEPARTEMEN TEKNIK ELEKTRO** | | | | | | | | **Kode Dokumen** |
| **RENCANA PEMBELAJARAN SEMESTER** | | | | | | | | | |
| **MATA KULIAH (MK)** | | | **KODE** | **Rumpun MK** | **BOBOT (sks)** | | **SEMESTER** | **Tgl Penyusunan** | |
| **Kesesuaian Medan Elektromagnetik** | | | TEE3106 |  | **2** |  |  | 7 AGUSTUS 2022 | |
| **OTORISASI / PENGESAHAN** | | | **Dosen Pengembang RPS** | | **Koordinator RMK** | | **Ka Prodi** | | |
| Ir. Hendra Zulkarnain, MT | | Ir. Hendra Zulkarnain, MT | | Suherman, ST., M.Comp., Ph.D | | |
| **Capaian Pembelajaran** | | **CPL-PRODI yang dibebankan pada MK** | | |  | | | | |
| CPL-1 | Mampu menerapkan pengetahuan matematika, ilmu pengetahuan alam/atau material, teknologi informasi dan kerekayasaan untuk mendapatkan pemahaman menyeluruh tentang prinsip-prinsip Teknik Elektro. | | | | | | |
| CPL-2 | Mampu mendesain komponen, sistem dan/atau proses untuk memenuhi kebutuhan yang diharapkan oleh masyarakat dengan dihadapkan pada batasan realistik yang meliputi aspek hukum, ekonomi, lingkungan, sosial, politik, kesehatan dan keselamatan, keberlanjutan. | | | | | | |
| CPL-3 | Mampu mendesain eksperimen laboratorium dan/atau lapangan serta menganalisis dan mengartikan data untuk memperkuat penilaian teknik khususnya dalam bidang Teknik Elektro. | | | | | | |
| CPL-4 | Mampu menyelesaikan permasalahan teknik khususnya dalam bidang Teknik Elektro secara bertanggungjawab dan memenuhi etika profesi. | | | | | | |
| CPL-5 | Mampu menerapkan metode, keterampilan dan perangkat teknik modern yang diperlukan untuk praktek profesi Teknik Elektro. | | | | | | |
| CPL-6 | Mampu berkomunikasi secara efektif, baik lisan maupun tulisan. | | | | | | |
| CPL-7 | Mampu mengevaluasi tugas-tugas dalam batasan yang ada secara disiplin dan menyeluruh. | | | | | | |
| CPL-8 | Mampu untuk bekerja dalam tim lintas disiplin dan multikultural serta global internasional. | | | | | | |
| CPL-9 | Mampu untuk bertanggung jawab kepada masyarakat dan mematuhi etika profesi dalam menyelesaikan permasalahan Teknik Elektro. | | | | | | |
| CPL-10 | Memiliki kapasitas pembelajaran sepanjang hayat termasuk akses pengetahuan yang relevan tentang isu-isu terkini. | | | | | | |
| CPL-11 | Mampu mengidentifikasi potensi daerah di Sumatera Utara dan menerapkan inovasi, metode, keterampilan, dan perangkat teknik elektro yang relevan untuk mengembangkan potensi daerah tersebut. | | | | | | |
| CPL-12 | Mampu mendesain sistem dan/atau proses untuk memanfaatkan energi baru dan terbarukan sebagai sumber energi listrik alternatif dari potensi sumber daya lokal dan nasional dengan wawasan global. | | | | | | |
| **Capaian Pembelajaran Mata Kuliah (CPMK)** | | |  | | | | |
| CPMK 1 | Memahami fenomena interferensi medan elektromagnetik dan lingkungan medan elektromagnetik pada peralatan listrik | | | | | | |
| CPMK 2 | Memahami sumber-sumber medan elektromagnetik | | | | | | |
| CPMK 3 | Memahami mekanisme terjadinya kopling medan elektromagnetik | | | | | | |
| CPMK 4 | Memahami prinsip-prinsip mitigasi interferensi medan elektromagnetik agar peralatan dan sistem kelistrikan memiliki kesesuaian medan elektromagnetik (EMC). | | | | | | |
| **Peta CPL – CPMK** | | |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | **CPL 01** | **CPL 02** | **CPL 03** | **CPL 04** | **CPL 05** | **CPL 06** | **CPL 07** | **CPL 08** | **CPL 09** | **CPL 10** | **CPL 11** | **CPL 12** | | CPMK 1 | **V** | **V** |  | **V** | **V** |  |  |  |  |  |  |  | | CPMK 2 | **V** | **V** |  | **V** | **V** |  |  |  |  |  |  |  | | CPMK 3 | **V** | **V** |  | **V** | **V** |  |  |  |  |  |  |  | | CPMK 4 | **V** | **V** |  | **V** | **V** |  |  |  |  |  |  |  | | | | | | | | |
| **Diskripsi Singkat MK** | | Mata kuliah Kesesuaian Medan Elektromagnetik membahas tentang interferensi medan elektromagnetik, lingkungan medan elektromagnetik, sumber medan elektromagnetik, kopling medan elektromagnetik dan mitigasi interferensi medan elektromagnetik (EMC) | | | | | | | |
| **Bahan Kajian:** Materi pembelajaran | | Pendahuluan, Pengertian Emi dan Emc, Beberapa Definisi, Akibat Emi, Masalah Emc, Faktor Yang Mempengaruhi Emc, Strategi Mitigasi Emi Agar Emc; Sumber Interferensi Elektromagnetik, Gambaran Umum Emi, Petir/Kilat/Elektrostatik, Switching Transient, Power Line dan Data Line, Gelombang Radio, Blok Diagram Emc Problem, Cara Agar Emc, Black Box Emc, Approach/Pendekatan Emc, Karakteristik Gangguan, Flow Diagram Rancangan Emc, Pengertian Kopling Elektromagnetik, Common And Differential Mode Field-To-Wire Coupling, Common Impedance Coupling, Differential Mode Wire-To-Wire Coupling Or Crosstalk, Beberapa Definisi Kopling Lain, Reduksi Kopling, Kegunaan Shielding, Enclosure Shielding, Keefektifan Shielding, Persamaan Keefektifan Shielding, Hal-Hal Praktis Yang Perlu Dipertimbangkan, Cable Shields, Lobang Atau Bukaan Pada Dinding Shielding, Pengaruh Bukaan, Enclosure Seams/Gaskets, Shielded Wire, Efek Shielding Yang Ditanahkan, Pengaruh Pigtails, Efek Shield Berganda, Pengaruh Twisted Wire Terhadap Kopling Cross Talk, Parameter Per Unit Panjang, Pemerisaian Medan Elektomagnetik Frekuensi Rendah, Metode Partisi Untuk Menguangi Interferensi Medan Elektromagnetik, Pengertian Pentanahan, Equipment Grounding, System Grounding, Solidly Grounding, Ungrounded System, Impedance/High-Resistance Grounded Wye Power System, Pentanahan Ac Power Distribution dan Safety, Service Entrance, noise control, isolated grounding, facility grounding, signal grounding, tahanan pentanahan, ruang anechoic, presentasi dan diskusi studi kasus (kelompok). | | | | | | | |
| **Pustaka** | | **Utama:** |  | | | | | | |
| 1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | | | | | | | |
| **Pendukung:** |  | | | | | | |
| 1. Christos Chritopoulos, "Principles and Techniques of Electromagnetic Compability”, CRC Press, Second Edition, NY, 2007 | | | | | | | |
| **Dosen Pengampu** | |  | | | | | | | |
| **Matakuliah syarat** | |  | | | | | | | |

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| **Mg Ke-** | **Kemampuan akhir tiap tahapan belajar (Sub-CPMK)** | **Penilaian** | | **Bantuk Pembelajaran;**  **Metode Pembelajaran;**  **Penugasan Mahasiswa;**  **[ Estimasi Waktu]** | | **Materi Pembelajaran**  **[Pustaka]** | **Bobot Penilaian (%)** |
| **Indikator** | **Kriteria & Teknik** |
| **(1)** | **(2)** | **(3)** | **(4)** | **Tatap Muka(5)** | **Daring (6)** | **(7)** | **(8)** |
| 1 | Mahasiswa memahami teori pendahuluan, pengertian emi dan emc: pendahuluan, pengertian emi dan emc, beberapa definisi, akibat emi, masalah emc, faktor yang mempengaruhi emc, strategi mitigasi emi agar emc | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Pendahuluan, Pengertian Emi dan Emc: Pendahuluan, Pengertian Emi dan Emc, Beberapa Definisi, Akibat Emi, Masalah Emc, Faktor Yang Mempengaruhi Emc, Strategi Mitigasi Emi Agar Emc  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 2 | Mahasiswa memahami sumber interferensi elektromagnetik: gambaran umum emi, petir/kilat/elektrostatik, switching transient, power line dan data line, gelombang radio | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Sumber Interferensi Elektromagnetik: Gambaran Umum Emi, Petir/Kilat/Elektrostatik, Switching Transient, Power Line dan Data Line, Gelombang Radio  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 3 | Mahasiswa memahami struktur kesesuaian medan elektromagnetik: blok diagram emc problem, cara agar emc, black box emc, approach/pendekatan emc, karakteristik gangguan, flow diagram rancangan emc | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Struktur Kesesuaian Medan Elektromagnetik: Blok Diagram Emc Problem, Cara Agar Emc, Black Box Emc, Approach/Pendekatan Emc, Karakteristik Gangguan, Flow Diagram Rancangan Emc  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 4 | Mahasiswa memahami teori kopling elektromagnetik: pengertian kopling elektromagnetik, common and differential mode field-to-wire coupling, common impedance coupling | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Kopling Elektromagnetik: Pengertian Kopling Elektromagnetik, Common And Differential Mode Field-To-Wire Coupling, Common Impedance Coupling  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 5 | Mahasiswa memahami teori kopling elektromagnetik (lanjutan): differential mode wire-to-wire coupling or crosstalk, beberapa definisi kopling lain, reduksi kopling | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Kopling Elektromagnetik (Lanjutan): Differential Mode Wire-To-Wire Coupling Or Crosstalk, Beberapa Definisi Kopling Lain, Reduksi Kopling  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 6 | Mahasiswa memahami perkembangan teori shielding atau perisai elektromagnetik: kegunaan shielding, enclosure shielding, keefektifan shielding, persamaan keefektifan shielding | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Mahasiswa memahami perkembangan teori shielding atau perisai elektromagnetik: kegunaan shielding, enclosure shielding, keefektifan shielding, persamaan keefektifan shielding  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 7 | Mahasiswa memahami toeri shielding atau perisai elektromagnetik (lanjutan): hal-hal praktis yang perlu dipertimbangkan, cable shields, lobang atau bukaan pada dinding shielding, pengaruh bukaan, enclosure seams/gaskets | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Shielding Atau Perisai Elektromagnetik (Lanjutan): Hal-Hal Praktis Yang Perlu Dipertimbangkan, Cable Shields, Lobang Atau Bukaan Pada Dinding Shielding, Pengaruh Bukaan, Enclosure Seams/Gaskets  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 8 | UJIAN TENGAH SEMESTER |  |  |  |  |  |  |
| 9 | Mahasiswa memahami teori shielding atau perisai elektromagnetik (lanjutan): shielded wire, efek shielding yang ditanahkan, pengaruh pigtails, efek shield berganda, pengaruh twisted wire terhadap kopling cross talk, parameter per unit panjang | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Shielding Atau Perisai Elektromagnetik (Lanjutan): Shielded Wire, Efek Shielding Yang Ditanahkan, Pengaruh Pigtails, Efek Shield Berganda, Pengaruh Twisted Wire Terhadap Kopling Cross Talk, Parameter Per Unit Panjang  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 10 | Mahasiswa memahami pemerisaian medan magnet frekuensi rendah dan partisi: pemerisaian medan elektomagnetik frekuensi rendah, metode partisi untuk menguangi interferensi medan elektromagnetik | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Pemerisaian Medan Magnet Frekuensi Rendah dan Partisi: Pemerisaian Medan Elektomagnetik Frekuensi Rendah, Metode Partisi Untuk Menguangi Interferensi Medan Elektromagnetik  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 11 | Mahasiswa memahami teori pentanahan dan penyambungan: pengertian pentanahan, equipment grounding, system grounding, solidly grounding | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Pentanahan dan Penyambungan: Pengertian Pentanahan, Equipment Grounding, System Grounding, Solidly Grounding  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 12 | Mahasiswa memahami teori pentanahan dan penyambungan (lanjutan): ungrounded system, impedance/high-resistance grounded wye power system, pentanahan ac power distribution dan safety, service entrance | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Pentanahan dan Penyambungan (Lanjutan): Ungrounded System, Impedance/High-Resistance Grounded Wye Power System, Pentanahan Ac Power Distribution dan Safety, Service Entrance  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009   Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 13 | Mahasiswa memahami teori pentanahan dan penyambungan(lanjutan): noise control, isolated grounding, facility grounding, signal grounding, tahanan pentanahan | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Pentanahan dan Penyambungan(Lanjutan): Noise Control, Isolated Grounding, Facility Grounding, Signal Grounding, Tahanan Pentanahan  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 7% |
| 14 | Mahasiswa memahami teori ruang anechoic dan presentasi serta diskusi studi kasus | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Ruang Anechoic dan Studi Kasus  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 8% |
| 15 | Mahasiswa memahami studi kasus (lanjutan): presentasi dan diskusi studi kasus | 1. *The accuracy in providing the information required* 2. *The student’s fluency in reading the memo (spelling, intonation, and speed)* 3. *The correctness of the student’s answers* | **Kriteria:**  *Marking Scheme*  **Bentuk:**  *Worksheet* (Non-Tes)   1. *Reading the memo provided.* 2. *Responding to the opening questions given.* 3. *Completing the table (problem-solution) according to the information in the memo.* 4. *Finding the word or phrase with similar meaning (synonym) according to the information in the memo.*   *Classifying the words or phrases with the correct headings.* | BM [(1x(2x60”)]  **Kegiatan:**   1. *Reviewing the previous lessons.* 2. *Reading the added learning materials.* 3. *Recording the presence.* 4. *Responding to opening questions in the ‘Discussion Forum’ section.* 5. *Submitting the assigned tasks.*   PT [(1x(2x60”)]  **Task 3:**  *Restating the information obtained in the form of an a-150-words paragraph.*  **Moda (*Learning Management System*):**  [elearning@usu.ac.id](mailto:elearning@usu.ac.id) | TM [(1x(2x50”)]  **Kegiatan:**   1. *Making notes of the learning materials explained.* 2. *Responding to the questions or instructions given.* 3. *Completing all the provided exercises individually.* 4. *Discussing the exercises completed.*   **Media:**  *Power Point Presentation (PPT)*  *Zoom Meeting*  *Audio Recording*  *English Handout*  **Metode Pembelajaran:**   1. *Online Lecture* 2. *Discussion* 3. *Self-Paced*   *Learning* | **Pokok Bahasan:**  Studi Kasus (Lanjutan): Presentasi dan Diskusi Studi Kasus  **Referensi:**   1. Henry W. Ott, “ Electromagnetic Compatibility Engineering” , A John Wiley and Sons Inc. Publication, NJ, 2009 2. Clayton R. Paul, “Introduction to Electromagnetic Compability”, A John Wiley and Sons Inc. Publication , Second Edition, NJ, 2006 | 8% |
| 16 | UJIAN AKHIR SEMESTER |  |  |  |  |  |  |
|  | Total | | | | | | **100** |