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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** | |
| **Medan Elektromagnetik 1** | | | TEE2207 |  | **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 matematika vektor, konsep dan perhitungan sederhana medan listrik statis serta lingkungan dan sumber medan listrik statis | | | | | | |
| CPMK 2 | Memahami teori dan perhitungan sederhanan fluks listrik, Hukum Gauss dan divergensi | | | | | | |
| CPMK 3 | Memahami teori dan perhitungan sederhana energi dan potensial listrik medan statis | | | | | | |
| CPMK 4 | Memahami teori dan perhitungan sederhana arus, konduktor, semikonduktor serta keadaan medan listrik pada perbatasan material serta kapasitansi. | | | | | | |
| **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 Medan Elektromagnetik 1 membahas tentang medan listrik statis, lingkungan dan sumber medan listrik statis, fluks listrik, energi dan potensial listrik statis, konduktor, dielektrik, kapasitansi. | | | | | | | |
| **Bahan Kajian:** Materi pembelajaran | | Perbedaan skalar dengan vektor, aljabar vektor, penjumlahan dan pengurangan vektor, kordinat kartesian, unsur (diferensial) vektor garis, luas dan volume, vektor satuan kordinat kartesian, medan vektor, perkalian titik (dot), perkalian vektor (cross), luas segitiga dibatasi dua vektor dan tiga titik, kordinat tabung, unsur (diferensial) garis, luas dan volume kordinat tabung, korelasi antara kordinat tabung dengan kordinat kartesian, kordinat bola, unsur (diferensial) garis, luas dan volume kordinat bola, korelasi antara kordinat bola dengan kordinat kartesian, Hukum Coulomb, permitivitas material, gaya dalam besaran vektor, gaya akibat banyak muatan, intensitas medan listrik, medan listrik akibat muatan diskrit, medan listrik akibat distribusi muatan volume, medan listrik akibat muatan garis, medan listrik akibat muatan bidang, eksperimen Michael Faraday, rapat fluks listrik, hubungan rapat fluks listrik dengan medan listrik, hukum Gauss, hukum Gauss pada volume diferensial, divergensi, operator vektor serta kemampuan melakukan perhitungan sederhana, teori Energi, perpindahan muatan dan energi listrik, potensial dan beda potensial, potensial akibat beberapa muatan titik, potensial pada lintasan tertutup, permukaan sepotensial, gradien tegangan, rapat energi dalam medan elektrostatis, teori arus listrik dan kerapatan arus listrik, hubungan rapat arus dengan rapat muatan volume arus kontinu, konduktor logam, konduktivitas dan hambatan, sifat konduktor, syarat batas konduktor, teori keadaan diperbatasan konduktor dan dielektrik, keadaan perbatasan antara dua dielektrik sempurna, teori kapasitansi, kapasitansi seri dan paralel, kapasitansi dua saluran kawat, kabel koaksial dan sperikal, kapasitor bola, energi kapasitor | | | | | | | |
| **Pustaka** | | **Utama:** |  | | | | | | |
| 1. William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014. 2. U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008 | | | | | | | |
| **Pendukung:** |  | | | | | | |
| 1. Matthew. O. Sadiku, “Element of Electromagnetics”, Oxford University Press; 6 edition, 2014 | | | | | | | |
| **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 memhami teori perbedaan skalar dengan vektor, aljabar vektor, penjumlahan dan pengurangan vektor, kordinat kartesian, unsur (diferensial) vektor garis, luas dan volume, vektor satuan kordinat kartesian serta mampu melakukan perhitungan sederhana. | 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:**  Perbedaan skalar dengan vektor, aljabar vektor, penjumlahan dan pengurangan vektor, kordinat kartesian, unsur (diferensial) vektor garis, luas dan volume, vektor satuan kordinat kartesian  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 8% |
| 2 | Mahasiswa memahami teori medan vektor, perkalian titik (dot), perkalian vektor (cross), luas segitiga dibatasi dua vektor dan tiga titik serta mampu melakukan perhitungan sederhana | 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:**  Medan vektor, perkalian titik (dot), perkalian vektor (cross), luas segitiga dibatasi dua vektor dan tiga titik  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 3 | Mahasiswa memahami teori kordinat tabung, unsur (diferensial) garis, luas dan volume kordinat tabung, korelasi antara kordinat tabung dengan kordinat kartesian serta mampu melakukan perhitungan sederhana. | 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:**  Vektor kordinat tabung, unsur (diferensial) garis, luas dan volume kordinat tabung, korelasi antara kordinat tabung dengan kordinat kartesian  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 4 | Mahasiswa memahami teori kordinat bola, unsur (diferensial) garis, luas dan volume kordinat bola, korelasi antara kordinat bola dengan kordinat kartesian serta mampu melakukan perhitungan sederhana. | 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:**  Vektor kordinat bola, unsur (diferensial) garis, luas dan volume kordinat bola, korelasi antara kordinat bola dengan kordinat kartesian.  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 5 | Mahasiswa memahami teori Hukum Coulomb, permitivitas material, gaya dalam besaran vektor, gaya akibat banyak muatan, intensitas medan listrik, medan listrik akibat muatan diskrit serta melakukan perhitungan sederhana | 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:**  Hukum Coulomb, permitivitas material, gaya dalam besaran vektor, gaya akibat banyak muatan, intensitas medan listrik, medan listrik akibat muatan diskrit  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 6 | Mahasiswa memahami medan listrik akibat distribusi muatan volume, medan listrik akibat muatan garis, medan listrik akibat muatan bidang serta melakukan perhitungan sederhana | 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:**  Medan listrik akibat distribusi muatan volume, medan listrik akibat muatan garis, medan listrik akibat muatan bidang.  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 7 | Mahasiswa memahami teori eksperimen Michael Faraday, rapat fluks listrik, hubungan rapat fluks listrik dengan medan listrik, hukum Gauss | 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:**  Eksperimen Michael Faraday, rapat fluks listrik, hubungan rapat fluks listrik dengan medan listrik, hukum Gauss  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 8 | UJIAN TENGAH SEMESTER |  |  |  |  |  |  |
| 9 | Mahasiswa memahami teori hukum Gauss, hukum Gauss pada volume diferensial serta melakukan perhitungan sederhana. | 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:**  Hukum Gauss, hukum Gauss pada volume diferensial  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 10 | Mahasiswa memahami teori divergensi, operator vektor serta kemampuan melakukan perhitungan sederhana | 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:**  Teori divergensi, operator vektor .  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 11 | Mahasiswa memahami teori Teori Energi, perpindahan muatan dan energi listrik, potensial dan beda potensial dan melakukan perhitungan sederhana. | 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:**  Teori Energi, perpindahan muatan dan energi listrik, potensial dan beda potensial  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 8% |
| 12 | Mahasiswa teori potensial akibat beberapa muatan titik, potensial pada lintasan tertutup, permukaan sepotensial, gradien tegangan, rapat energi dalam medan elektrostatis serta melakukan perhitungan sederhana. | 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:**  Potensial akibat beberapa muatan titik, potensial pada lintasan tertutup, permukaan sepotensial, gradien tegangan, rapat energi dalam medan elektrostatis  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 13 | Mahasiswa memahami teori arus listrik dan kerapatan arus listrik, hubungan rapat arus dengan rapat muatan volume arus kontinu, konduktor logam, konduktivitas dan hambatan, sifat konduktor serta melakukan perhitungan sederhana. | 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:**  Teori arus listrik dan kerapatan arus listrik, hubungan rapat arus dengan rapat muatan volume arus kontinu, konduktor logam, konduktivitas dan hambatan, sifat konduktor  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 14 | Mahasiswa memahami teori syarat batas konduktor, teori keadaan diperbatasan konduktor dan dielektrik, keadaan perbatasan antara dua dielektrik sempurna serta mampu melakukan perhitungan sederhana. | 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:**  Syarat batas konduktor, teori keadaan diperbatasan konduktor dan dielektrik, keadaan perbatasan antara dua dielektrik sempurna  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 15 | Mahasiswa memahami teori kapasitansi, kapasitansi seri dan paralel, kapasitansi dua saluran kawat, kabel koaksial dan sperikal, kapasitor bola, energi kapasitor serta mampu melakukan perhitungan sederhana | 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:**  Teori kapasitansi, kapasitansi seri dan paralel, kapasitansi dua saluran kawat, kabel koaksial dan sperikal, kapasitor bola, energi kapasitor  **Referensi:**   1. **William H. Hayt, Jr. . John A. Buck, “Engineering Electromagnetics”, Mc Graw Hill, 8th Edition, 2014.** 2. **U. A. Bakshi, A. V. Bakshi, “Electromagnetic Fields”. Technical Publications, 2008** | 7% |
| 16 | UJIAN AKHIR SEMESTER |  |  |  |  |  |  |
|  | Total | | | | | | **100** |