


RENCANA PEMBELAJARAN SEMESTER (RPS)
FISIKA DASAR II (3 SKS)

	INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS) FAKULTAS SAINS dan ANALITIKA DATA DEPARTEMEN FISIKA					Kode Dokumen
RENCANA PEMBELAJARAN SEMESTER <i>Semester Learning Plan</i>						
MATA KULIAH (MK) <i>COURSE</i>	KODE <i>CODE</i>	Rumpun MK <i>Course Cluster</i>	BOBOT (sks) <i>Credits</i>		SEMESTER <i>Semester</i>	Tgl Penyusunan <i>Compilation Date</i>
Fisika II <i>Physics II</i>	SF184202	SPKB	3	3/0	2	10 Desember 2021
OTORISASI / PENGESAHAN <i>AUTHORIZATION / ENDORSEMENT</i>	Dosen Pengembang RPS <i>Developer Lecturer of Semester Learning Plan</i>		Koordinator RMK <i>Course Cluster Coordinator</i>		Ka DEPARTEMEN <i>Head of Department</i>	
Capaian Pembelajaran <i>Learning Outcomes</i>	CPL-PRODI yang dibebankan pada MK <i>PLO Program Learning Outcome</i>					
	KU1	Menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan/atau teknologi sesuai dengan bidang keahliannya <i>Applying logical, critical, systematic, and innovative thinking in the context of developing or implementing science and / or technology in accordance with their field of expertise</i>				
	KU2	mampu menunjukkan kinerja mandiri, bermutu, dan terukur; <i>able to demonstrate independent, quality, and measurable performance;</i>				
	S9	menunjukkan sikap bertanggung jawab atas pekerjaan di bidang keahliannya secara mandiri;				

		<i>show an attitude of responsibility for work in their field of expertise independently;</i>		
	<p>Capaian Pembelajaran Mata Kuliah (CPMK) / <i>Course Learning Outcome (CLO)</i> Bila CP MK sbg penjabaran kemampuan setiap Tahap Pembelajaran dalam MK maka CPMK = Sub CPMK <i>If CLO as description capability of each Learning Stage in the course, then CLO = Lesson Learning Outcome (LLO)</i></p>			
	CPMK1	mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam menyelesaikan masalah dan implementasi ilmu fisika I.		
	CLO1	<i>able to apply logical, critical, systematic, and innovative thinking in solving problems and implementing physics I.</i>		
	CPMK2	mampu menunjukkan kinerja mandiri, bermutu, dan terukur;		
	CLO2	<i>able to demonstrate independent, quality, and measurable performance;</i>		
	CPMK3	menunjukkan sikap bertanggung jawab atas pekerjaan di bidang keahliannya secara mandiri;		
	CLO3	<i>show an attitude of responsibility for work in their field of expertise independently;</i>		
Peta CPL – CP MK	<i>Tuliskan peta matriks antara CPL dengan CPMK (Sub CP MK)</i>			
Map of PLO - CLO		KU1	KU2	S9
	Sub-CPMK1	√		
	Sub-CPMK2	√	√	√
	Sub-CPMK3	√	√	√
	Sub-CPMK4	√	√	√
	Sub-CPMK5	√	√	√
	Sub-CPMK6	√	√	√

<p>Diskripsi Singkat MK</p> <p>Short Description of Course</p>	<p>Pada mata kuliah ini mahasiswa akan belajar memahami hukum-hukum dasar fisika, Medan Listrik; Potensial Listrik; Arus Listrik ; Medan magnet; Gaya Gerak Listrik (EMF) Induksi dan Arus Bolak Balik, melalui uraian matematika sederhana serta memperkenalkan contoh pemakaian konsep.</p> <p><i>In this course, students will learn to understand the basic laws of physics, the Electric Field; Electric Potential; Electric current ; Magnetic field; Electric Motion Force (EMF) Induction and Alternating Current, through simple mathematical descriptions and introducing examples of the use of concepts.</i></p>
<p>Bahan Kajian: Materi pembelajaran</p> <p>Course Materials:</p>	<p>Gaya dan medan listrik: Muatan listrik, Hukum Coulomb;</p> <p>Medan listrik: kuat medan listrik, garis gaya, perhitungan kuat medan listrik untuk muatan titik, muatan garis, cincin, piringan, silinder;</p> <p>Hukum Gauss: fluks, garis gaya, Hukum Gauss dan aplikasinya untuk muatan silinder dan bola;</p> <p>Potensial listrik: Energi potensial, beda potensial listrik, hubungan potensial listrik dan medan listrik, perhitungan potensial listrik untuk muatan titik, muatan garis, cincin, piringan, silinder dan bola;</p> <p>Kapasitor: Kapasitansi, perhitungan kapasitansi untuk kapasitor keping sejajar, kapasitor silinder dan kapasitor bola, rangkaian kapasitor seri dan paralel, bahan dielektrik, energi kapasitor;</p> <p>Arus listrik: Arus dan gerak muatan, hukum Ohm, resistivitas, resistansi, daya listrik;</p> <p>Rangkaian arus searah: rangkaian resistor seri dan paralel, hukum Kirchoff;</p> <p>Medan magnet: fluks dan induksi magnet, gaya Lorentz, hukum Biot Savard-Ampere, perhitungan medan magnet untuk kawat lurus berarus, cincin, solenoida dan toroida;</p> <p>GGL Induksi : Hukum Faraday, Hukum Lenz, GGL induksi, Induktansi diri dan induktansi gandeng; energi pada induktor;</p> <p>Arus bolak balik: arus bolak-balik dalam resistor, induktor, kapasitor, Impedansi, rangkaian R-L dan R-C untuk seri dan paralel, R-L-C seri, Daya, Resonansi.</p> <p>Force and Electric field <i>Electric charge, Coulomb's Law;</i> Electric field: <i>electric field strength, line force, calculation of electric field strength for point charge, line charge, ring, disk, cylinder;</i> Gauss's Law: <i>flux, lines of force, Gauss's Law and its application to cylindrical and spherical charges;</i> Electric potential: <i>potential energy, electric potential difference, relationship between electric potential and electric field, calculation of electric potential for point charges, line charges, rings, plates, cylinders and spheres;</i> Capacitors: <i>Capacitance, capacitance calculations for strip capacitors, cylindrical and ball capacitors, series and parallel capacitor circuits, dielectric materials, capacitor energy;</i></p>

		<p>Electric current: current and motion of charge, Ohm's law, resistivity, resistance, electric power; Direct current circuits: series and parallel resistor circuits, Kirchoff's law; Magnetic fields: magnetic flux and induction, Lorentz forces, Biot Savard-Ampere law, computation of magnetic fields for straight-current wires, rings, solenoids and toroides; Induced EMF: Faraday's Law, Lenz's Law, Induced EMF, Self-Inductance and Coupled Inductance; energy in the inductor; Transient Symptoms: calculation of change in current with time for series RC and CL circuits Alternating current: alternating current in resistors, inductors, capacitors, impedance, R-L and R-C circuits for series and parallel, R-L-C series, Power, Resonance.</p>				
Pustaka References	Utama / main:					
		<ol style="list-style-type: none"> 1. Sears & Zemanky, "University Physics", Pearson Education, 14thed, USA, 2016 2. Douglas C. Giancoli, 'Physics for Scientists and Engineers, Pearson Education, 4th ed, London, 2014 3. Tim Dosen, " Fisika II", Fisika FMIPA-ITS 				
	Pendukung/ supporting:					
		<ol style="list-style-type: none"> 4. Halliday, Resnic, Jearl Walker; 'Fundamental of Physics'. John Wiley and Sons, 10th ed, New York, 2014 5. Tipler, PA, 'Physics for Scientists and Engineers ',6th ed, W.H. Freeman and Co, New York, 2008 				
Dosen Pengampu Lecturers						
Matakuliah syarat Prerequisite						
Mg ke/ Week	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / Final ability of each learning stage (LLO)	Penilaian / Assessment		Bentuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / Form of Learning; Learning Method; Student Assignment; [Estimated Time]	Materi Pembelajaran [Pustaka] / Learning Material [Reference]	Bobot Penilaian /Assess- ment Load (%)
		Indikator / Indicator	Kriteria & Teknik / Criteria & Techniques			

(1)	(2)	(3)	(4)	Tatap Muka / In-class (5)	Daring / Online (6)	(7)	(8)
1,2,3	<p>Sub-CPMK1: Mahasiswa memahami butir-butir penyusun materi serta sifat kelistrikannya, hakekat konduktor dan dielektrik.</p> <p>Sub-CPMK2: Mahasiswa Memahami kuat medan listrik berdasarkan gaya coulomb dan hukum gauss</p> <p><i>LLO1: Students understand the constituent points of the material as well as its electrical properties, the nature of conductors and dielectrics.</i></p> <p><i>LLO2: Students Understand electric field strength based on coulomb force and Gauss law</i></p>	<p>1.1 Mampu menghitung gaya Coulomb</p> <p>1.2 Mampu menghitung medan listrik sistem diskrit</p> <p>1.3 Mampu menghitung medan listrik sistem diskrit</p> <p>1.4 Mampu menggunakan hukum Gauss</p> <p>1.1 <i>Be able to calculate Coulomb force</i></p> <p>1.2 <i>Able to calculate the electric field of a discrete system</i></p> <p>1.3 <i>Able to calculate the electric field of a discrete system</i></p> <p>1.4 <i>Able to use Gauss's law</i></p>	<p>Kriteria: Menggunakan rubrik analitik dan pedoman penskoran (<i>Marking Scheme</i>)</p> <p>Teknik non-test:</p> <ul style="list-style-type: none"> • Meringkas materi kuliah; <p>Teknik test:</p> <p>Criteria: <i>Using analytical rubrics and scoring guidelines (Marking Scheme)</i></p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • Summarize the lecture material; <p>Test technique:</p>	<ul style="list-style-type: none"> • Kuliah: • Diskusi, [TM: 1mgx(3sksx50")] • Tugas-1: Menyusun ringkasan kuliah dan mengerjakan contoh latihan soal yang diberikan dalam kuliah [PT+BM:(1+1)x(2x60")] • Latihan soal dan Asistensi Latihan menyelesaikan soal. [TM: 1mgx(1sksx50")] • Lectures: • Discussion, [TM: 1weekx (3sksx50")] • Task-1: Compile a lecture summary and work on sample practice questions given in the lecture [PT + BM: (1 + 1) x (2x60")] 	<ul style="list-style-type: none"> • Kuliah tatap muka maya (Zoom); • MyITS-Classroom: Sumber belajar: • Diskusi; [TM: 1mgx(3sksx50")] <p>Tugas-1: Menyusun ringkasan kuliah dan mengerjakan contoh latihan soal yang diberikan dalam kuliah</p> <p>Face-to-face virtual lectures (Zoom);</p> <ul style="list-style-type: none"> • MyITS-Classroom: Learning Resources: • Discussion; [TM: 1weekx(3sksx50")] • Task-1: Compile a lecture summary and work on sample practice questions given in the lecture 	<p>Bab 1: Hukum Coulomb dan medan listrik (Ref.Utama no.2)</p> <p><i>Chapter 1: Coulomb's laws and electric fields (Main ref. 2)</i></p>	15%

				<ul style="list-style-type: none"> • Exercise questions and assistance Practice solving problems. [TM: 1week (1sksx50")] 			
4,5	<p>Sub-CPMK 3: Mahasiswa mampu memahami berbagai bentuk potensial listrik pada konduktor bermuatan dan konsep kapasitor</p> <p><i>LLO3: Students are able to understand various forms of electric potential in charged conductors and the concept of capacitors</i></p>	<p>1.1 Ketepatan menjelaskan Integral garis kuat medan listrik,</p> <p>1.2 Ketepatan Menjelaskan potensial listrik dan energi potensial listrik</p> <p>1.3 Ketepatan menghitung persoalan potensial listrik yang diantaranya adalah potensial listrik oleh muatan diskrit, cincin bermuatan, dan bola bermuatan.</p> <p>1.4 Ketepatan Menjelaskan konsep kapasitor dan menghitung nilai kapasitansi</p>	<p>Kriteria: Pedoman Penilaian</p> <p>Teknik non-test:</p> <ul style="list-style-type: none"> • Penjelasan materi kuliah • Diskusi dan tanya-jawab • Mengerjakan latihan soal bersama-sama di buku tentang integral garis kuat medan listrik, potensial listrik, dan energi potensial listrik, kapasitor <p>Teknik test: Latihan soal & Tugas</p> <p>Criteria:</p>	<ul style="list-style-type: none"> • Kuliah: • Diskusi, [TM: 1mgx(3sksx50")] • Tugas-1: Menyusun ringkasan kuliah dan menyelesaikan soal – soal konsep integral garis kuat medan listrik, potensial listrik, energi potensial listrik, kapasitor [PT+BM:(1+1)x(2x60")] • Asistensi: Menghitung potensial listrik oleh muatan diskrit, cincin bermuatan, dan bola bermuatan [TM: 1mgx(1sksx50")] • Lectures: • Discussion, 	<ul style="list-style-type: none"> • Kuliah tatap muka daring (Zoom); • Diskusi; [TM: 1mgx(3sksx50")] • Tugas-1: Menyusun ringkasan ringkasan kuliah dan menghitung potensial listrik oleh muatan diskrit dan bola bermuatan [PT+BM:(1+1)x(2x60")] Asistensi: [TM: 1mgx(1sksx50")] • Face-to-face online lectures (Zoom); • Discussion; 	<p>Potensial Listrik</p> <p>Potensial Listrik pada konduktor bermuatan</p> <p><i>Electric Potential</i></p> <p><i>Electric potential in charged conductors</i></p> <p>Pustaka / references:</p> <ul style="list-style-type: none"> • Halliday,R.,et all, 2014 • Douglas C. Giancoli, 2014 • Serway, 2004 	17,5%

		<p>1.1 Accuracy describes the line integral to the electric field,</p> <p>1.2 Accuracy Describe electric potential and electric potential energy</p> <p>1.3 Accuracy in calculating electric potential problems which include electric potential by discrete charges, charged rings and charged spheres.</p> <p>1.4 Accuracy Explain the concept of capacitor and calculate the value of capacitance</p>	<p>assessment Guidelines</p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • Explanation of course material • Discussion and questions and answers • Doing practice problems together in books on the integral of electric field lines, electric potential, and electric potential energy, capacitors <p>Test technique: Practice questions & Assignments</p>	<p>[TM: 1weekx(3sksx50")]</p> <ul style="list-style-type: none"> • Task-1: Compile a lecture summary and complete questions on the concept of integral lines of electric field strength, electric potential, electric potential energy, capacitors <p>[PT+BM:(1+1)x(2x60")]</p> <p>• Assistance: Calculates the electric potential by discrete charges, charged rings, and charged spheres</p> <p>[TM: 1weekx(1sksx50")]</p>	<p>[TM: 1weekx(3sksx50")]</p> <ul style="list-style-type: none"> • Task-1: Compile a lecture summary and calculate the electric potential by discrete charges and charged balls <p>[PT+BM:(1+1)x(2x60")]</p> <p>Assistance: [TM: 1mgx (1sksx50 ")]</p>	<p>Tim Dosen Fisika ITS</p>	
6,7	<p>Sub-CPMK 4: Mahasiswa mampu memahami konsep arus dan mampu menghitung besaran-besaran dalam rangkaian arus searah.</p> <p><i>LLO4: Students are able to understand the concept of</i></p>	<p>4.1 Ketepatan menjelaskan konsep arus dan hukum ohm;</p> <p>4.2 Ketepatan menjelaskan arus dan tegangan dalam rangkaian terbuka ataupun tertutup;</p>	<p>Kriteria: Pedoman Penilaian</p> <p>Teknik non-test:</p> <ul style="list-style-type: none"> • Penjelasan materi kuliah 	<ul style="list-style-type: none"> • Kuliah: • Diskusi, [TM: 1mgx(3sksx50")] • Tugas-1: Menyusun ringkasan kuliah dan menyelesaikan soal – soal konsep arus, 	<ul style="list-style-type: none"> • Kuliah tatap muka daring (Zoom); • Diskusi, [TM: 1mgx(3sksx50")] • Tugas-1: Menyusun ringkasan ringkasan kuliah dan menghitung 	<p>Arus Searah</p> <p>Arus searah, hukum ohm dan hukum kirchoff</p> <p><i>Direct current</i></p>	17,5%

	<p><i>current and be able to calculate quantities in a direct current circuit.</i></p>	<p>4.3 Ketepatan menjelaskan Hukum kirchoff</p> <p>1.1. Ketepatan menghitung penyelesaian soal-soal yang berkaitan dengan arus searah;</p> <p>4.1 <i>Accuracy explains the concept of current and ohms law;</i></p> <p>4.2 <i>Accuracy describes currents and voltages in open or closed circuits;</i></p> <p>4.3 <i>Accuracy explaining Kirchoff's Law</i></p> <p>1.1. <i>The accuracy of calculating the solving of problems related to direct current;</i></p>	<ul style="list-style-type: none"> • Diskusi dan tanya-jawab • Mengerjakan latihan soal bersama-sama di buku tentang konsep arus, hukum ohm, hukum kirchoff arus dan tegangan dalam rangkaian terbuka/tertutup <p>Teknik test: Latihan soal & Tugas</p> <p>Criteria: <i>assessment Guidelines</i></p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • <i>Explanation of course material</i> 	<p>hukum ohm, hukum kirchoff.</p> <p>[PT+BM:(1+1)x(2x60")]</p> <ul style="list-style-type: none"> • Latihan Soal dan Asistensi: Menghitung arus dan tegangan dalam rangkaian terbuka ataupun tertutup <p>[TM: 1mgx(1sksx50")]</p> <ul style="list-style-type: none"> • Lectures: • Discussion, [TM: 1weekx (3sksx50 ")] • Task-1: <i>Compile a lecture summary and solve problems on the concept of currents, Ohm's law, Kirchoff's law.</i> [PT + BM: (1 + 1) x (2x60 ")] • Exercise and Assistance: 	<p>besaran dalam konsep arus searah</p> <p>[PT+BM:(1+1)x(2x60")]</p> <ul style="list-style-type: none"> • Asistensi [TM: 1mgx(1sksx50")] • Face-to-face online lectures (Zoom); • Discussion; [TM: 1mgx (3sksx50 ")] Task-1: <i>Prepare a lecture summary and calculate the quantity in the concept of direct current</i> [PT + BM: (1 + 1) x (2x60 ")] • Assistance [TM: 1mgx (1sksx50 ")] 	<p><i>Direct current, Ohms law and Kirchoff's law</i></p> <p>Pustaka / references :</p> <ul style="list-style-type: none"> • Halliday,R.,et all, 2014 • Douglas C. Giancoli, 2014 • Serway, 2004 <p>Tim Dosen Fisika ITS</p>	
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			<ul style="list-style-type: none"> • Discussion and questions and answers • Doing practice problems together in books on the concept of current, ohms law, current kirchoff law and voltage in open / closed circuits <p>Test technique: Practice questions & Assignments</p>	Calculates current and voltage in open or closed circuits <i>[TM: 1weekx (1sksx50")]</i>			
8	Evaluasi tengah semester / Midterm Exam						
9,10	<p>Sub-CPMK5: Mampu menggunakan rumus gaya magnet dan medan magnet terhadap arus listrik dan muatan bergerak</p> <p>Sub-CPMK6: menganalisa peranan magnetisasi dalam material magnetik dan hysteresis loop</p> <p><i>LLO5: Able to apply magnetic force formulas and magnetic</i></p>	<p>4.1 Ketepatan menjelaskan tentang gaya magnet serta gerak partikel-bermuatan dan kumparan dalam medan magnet;</p> <p>4.2 Ketepatan memformulasikan dan menggunakan rumus induksi magnet oleh arus listrik;</p> <p>1.1 Ketepatan menjelaskan peranan</p>	<p>Kreteria: Menggunakan rubrik</p> <p>Teknik non-test:</p> <ul style="list-style-type: none"> • Menyelesaikan tugas (essay); • Meringkas materi kuliah <p>Teknik test:</p> <ul style="list-style-type: none"> • Quiz-2 (dengan sub-CPMK 5) 	<ul style="list-style-type: none"> • Kuliah; • Diskusi; <i>[TM: 1mgx(3sksx50")]</i> • Tugas-1: Menyelesaikan soal essay perhitungan induksi magnet dan gaya magnet • Tugas-2: Menyusun ringkasan peranan induksi magnetik dalam teknologi <i>[PT+BM:(1+1)x(3x60")]</i> 	<ul style="list-style-type: none"> • Kuliah tatap muka maya dan diskusi melalui Zoom <i>[TM: 1mgx(3x50")]</i> • MyITS classroom: Kuliah asinkronus dan forum diskusi <p><i>Assignment/ Tugas</i> <i>[PT+BM:(1+1)x(3x60")]</i> Quiz-2 dan EAS: daring melalui myITS classroom (bersama</p>	<p>Gaya Magnet & Medan Magnet: gaya magnet pada partikel bermuatan dan kumparan dalam pengaruh medan magnet, induksi magnet oleh arus listrik, serta</p>	15%

	<p><i>fields to electric currents and moving charges</i></p> <p><i>LLO6: analyzes the role of magnetization in magnetic materials and hysteresis loops</i></p>	<p>magnetisasi dalam material magnetik dan kurva histeresis</p> <p>4.1 Accuracy describes the magnetic force and motion of charged-particles and coils in a magnetic field;</p> <p>4.2 Accuracy in formulating and using the formula for magnetic induction by electric currents;</p> <p>1.1 Accuracy explains the role of magnetization in magnetic materials and hysteresis curves</p>	<ul style="list-style-type: none"> • EAS (dengan sub-CPMK 5 & 6) <p>Criteria: Using a rubric</p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • Complete assignments (essays); • Summarize the course material <p>Test technique:</p> <ul style="list-style-type: none"> • Quiz-2 (with sub-CPMK 5) • EAS (with sub-CPMK 5 & 6) 	<p>Asistensi</p> <p>[TM: 1mgx(1sksx50")]</p> <ul style="list-style-type: none"> • Lectures; • Discussion; [TM: 1weekx (3sksx50 ")] • Task-1: Complete an essay problem for calculating magnetic induction and magnetic force • Task-2: Summarize the role of magnetic induction in technology [PT + BM: (1 + 1) x (3x60 ")] <p>Assistance [TM: 1weekx (1sksx50 ")]</p>	<p>dengan sub-CPMK 5 & 6)</p> <p>Asistensi [TM: 1mgx(1sksx50")]</p> <ul style="list-style-type: none"> • Face-to-face virtual lectures and discussions via Zoom [TM: 1weekx (3x50 ")] • MyITS classroom: Asynchronous lectures and discussion forums <p>Assignment / Task [PT + BM: (1 + 1) x (3x60 ")]</p> <p>Quiz-2 and EAS: online via myITS classroom (together with sub-CPMK 5 & 6)</p> <p>Assistance [TM: 1weekx (1sksx50 ")]</p>	<p>aplikasinya dalam teknologi</p> <p>Magnetic Force & Magnetic Field: magnetic force on charged particles and coils under the influence of magnetic fields, magnetic induction by electric currents, and their application in technology</p>	
11,12	Sub-CPMK7: Memahami prinsip timbulnya gaya gerak listrik, dan arus dalam	4.1 Ketepatan menjelaskan tentang Hukum Faraday,	Kreteria: Menggunakan rubrik	<ul style="list-style-type: none"> • Kuliah; • Diskusi; 	<ul style="list-style-type: none"> • Kuliah tatap muka maya dan diskusi melalui Zoom 	GGL Induksi: Hukum Faraday,	17,5%

<p>resistor, kapasitor dan induktor</p> <p><i>LLO7: Understand the principle of electromotive force, and currents in resistors, capacitors and inductors</i></p>	<p>Hukum Lenz dan timbulnya GGL induksi;</p> <p>4.3 Ketepatan memformulasikan dan menggunakan rumus GGL Induksi, induktansi diri, induktansi silang dan energi yang tersimpan pada induktor</p> <p>4.1 <i>Accuracy explains Faraday's Law, Lenz's Law and the emergence of induced EMF;</i></p> <p>4.3 <i>Accuracy to formulate and use the formula EMF Induction, self-inductance, cross inductance and energy stored in the inductor</i></p>	<p>Teknik non-test:</p> <ul style="list-style-type: none"> • Menyelesaikan tugas (essay); • Meringkas materi kuliah • Keaktifan <p>Teknik test:</p> <ul style="list-style-type: none"> • Quiz-2 (dengan sub-CPMK 4) • EAS (dengan sub-CPMK 5 & 6) <p>Criteria: <i>Using a rubric</i></p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • Complete assignments (essays); • Summarize the course material • Activeness <p>Test technique:</p> <ul style="list-style-type: none"> • Quiz-2 (with sub-CPMK 4) • EAS (with sub-CPMK 5 & 6) 	<p>[TM: 1mgx(3sksx50'')]</p> <ul style="list-style-type: none"> • Tugas-1: Menyelesaikan soal essay perhitungan mengenai GGL Induksi • Latihan soal dan Asistensi: Latihan soal-soal GGL Induksi [TM: 1mgx (1sksx50'')] <p>• Lectures;</p> <p>• Discussion; [TM: 1weekx(3sksx50'')]</p> <ul style="list-style-type: none"> • Task-1: Complete a computation essay on induced emf • Exercise and Assistance: Practice Induction GGL questions [TM: 1weekx (1sksx50'')] 	<p>[TM: 1mgx(3sksx50'')]</p> <ul style="list-style-type: none"> • MyITS classroom: Kuliah asinkronus dan forum diskusi <p><i>Assignment/ Tugas</i> [PT+BM:(1+1)x(3x60'')]</p> <p>Quiz-2 dan EAS: daring melalui myITS classroom (bersama dengan sub-CPMK 5 & 6)</p> <ul style="list-style-type: none"> • Asistensi: Latihan soal-soal GGL Induksi [TM: 1mgx (1sksx50'')] <p>• Face-to-face virtual lectures and discussions via Zoom [TM: 1weekx (3sksx50 '')]</p> <ul style="list-style-type: none"> • MyITS classroom: Asynchronous lectures and discussion forums <p>Assignment / Task [PT + BM: (1 + 1) x (3x60 '')]</p>	<p>Hukum Lenz, GGL induksi, Induktansi diri dan induktansi gandeng; energi pada induktor;</p> <p><i>Induced EMF: Faraday's Law, Lenz's Law, Induced EMF, Self-Inductance and Coupled Inductance; energy in the inductor;</i></p>	
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					<p>Quiz-2 and EAS: online via myITS classroom (together with sub-CPMK 5 & 6)</p> <ul style="list-style-type: none"> • Assistance: Practice Induction GGL questions <p>[TM: 1weekx (1sksx50")]</p>		
13,14	<p>Sub-CPMK 6: mampu menjelaskan konsep arus bolak-balik, gejala transient, menganalisa dan memecahkan permasalahan tentang rangkaian RLC</p> <p><i>LLO6: able to explain the concept of alternating current, transient symptoms, analyze and solve problems about the RLC circuit</i></p>	<p>1.1 Ketepatan menjelaskan konsep arus bolak-balik;</p> <p>1.2 Ketepatan menjelaskan gejala transien;</p> <p>Ketepatan menghitung penyelesaian soal-soal yang berkaitan dengan rangkaian RLC;</p> <p>1.1 Accuracy explains the concept of alternating current;</p> <p>1.2 Accuracy in describing transient symptoms;</p>	<p>Kriteria: Menggunakan rubrik</p> <p>Teknik test: Tugas mandiri/kelompok</p> <p>Teknik non-test:</p> <ul style="list-style-type: none"> • Meringkas materi kuliah; • Kehadiran • Keaktifan <p>Criteria: Using a rubric</p>	<ul style="list-style-type: none"> • Kuliah: • Diskusi, [TM: 1mgx(3sksx50")] • Tugas: Menyusun ringkasan kuliah dan menghitung besaran dalam rangkaian RLC (impedansi, sudut fasa, harga arus efektif, frekuensi resonansi) [PT+BM:(1+1)x(2x60")] • Latihan soal dan Asistensi: Latihan soal rangkaian arus bolak-balik [TM: 1mgx(1sksx50")] 	<p>• Kuliah tatap muka online (Zoom);</p> <ul style="list-style-type: none"> • Diskusi; [TM: 1mgx(3sksx50")] <p>Tugas-1: Menyusun ringkasan ringkasan kuliah dan menghitung dan mencari penyelesaian soal-soal rangkaian RLC (impedansi, sudut fasa, harga arus efektif, frekuensi resonansi) [PT+BM:(1+1)x(2x60")]</p> <ul style="list-style-type: none"> • Asistensi: Latihan soal rangkaian arus bolak-balik 	<p>Arus Bolak-Balik</p> <p>Arus bolak-balik; gejala Transien;rangkai an RLC</p> <p>Alternating Current</p> <p><i>Alternating current; symptoms Transients; RLC circuits</i></p>	17,5%

		<p>Accuracy in calculating the solving of problems related to the RLC circuit;</p>	<p>Test technique: Independent / group assignments</p> <p>Non-test technique:</p> <ul style="list-style-type: none"> • Summarize the lecture material; • Attendance • Activeness 	<ul style="list-style-type: none"> • Lectures: • Discussion, [TM: 1mgx (3sksx50 ")] • Task: Compile a lecture summary and calculate the quantities in the RLC circuit (impedance, phase angle, effective current value, resonant frequency) [PT + BM: (1 + 1) x (2x60 ")] • Practice questions and Assistance: Exercise problems with alternating current circuits [TM: 1mgx (1sksx50 ")] 	<p>[TM: 1mgx(1sksx50")]</p> <ul style="list-style-type: none"> • Face-to-face online lectures (Zoom); • Discussion; [TM: 1weekx (3sksx50 ")] <p>Task-1: Compile a lecture summary and calculate and solve RLC circuit problems (impedance, phase angle, effective current value, resonant frequency) [PT + BM: (1 + 1) x (2x60 ")]</p> <ul style="list-style-type: none"> • Assistance: Exercise circuit problems alternating current [TM: 1weekx (1sksx50 ")] 	<p>Pustaka / references :</p> <ul style="list-style-type: none"> • Buku Diklat Tim Dosen Fisika ITS • Halliday,R.,et all, 2014 • Douglas C. Giancoli, 2014 • Serway, 2004 	
15,16	Evaluasi Akhir Semester / Final exam						100 %

Catatan sesuai dengan SN Dikti Permendikbud No 3/2020:

1. Capaian Pembelajaran Lulusan PRODI (CPL-PRODI) adalah kemampuan yang dimiliki oleh setiap lulusan PRODI yang merupakan internalisasi dari sikap, penguasaan pengetahuan dan ketrampilan sesuai dengan jenjang prodinya yang diperoleh melalui proses pembelajaran.
2. CPL yang dibebankan pada mata kuliah adalah beberapa capaian pembelajaran lulusan program studi (CPL-PRODI) yang digunakan untuk pembentukan/pengembangan sebuah mata kuliah yang terdiri dari aspek sikap, ketrampilan umum, ketrampilan khusus dan pengetahuan.
3. CP Mata kuliah (CPMK) adalah kemampuan yang dijabarkan secara spesifik dari CPL yang dibebankan pada mata kuliah, dan bersifat spesifik terhadap bahan kajian atau materi pembelajaran mata kuliah tersebut.
4. Sub-CP Mata kuliah (Sub-CPMK) adalah kemampuan yang dijabarkan secara spesifik dari CPMK yang dapat diukur atau diamati dan merupakan kemampuan akhir yang direncanakan pada tiap tahap pembelajaran, dan bersifat spesifik terhadap materi pembelajaran mata kuliah tersebut.
5. Indikator penilaian kemampuan dalam proses maupun hasil belajar mahasiswa adalah pernyataan spesifik dan terukur yang mengidentifikasi kemampuan atau kinerja hasil belajar mahasiswa yang disertai bukti-bukti.
6. Kreteria Penilaian adalah patokan yang digunakan sebagai ukuran atau tolok ukur ketercapaian pembelajaran dalam penilaian berdasarkan indikator-indikator yang telah ditetapkan. Kreteria penilaian merupakan pedoman bagi penilai agar penilaian konsisten dan tidak bias. Kreteria dapat berupa kuantitatif ataupun kualitatif.
7. Teknik penilaian: tes dan non-tes.
8. Bentuk pembelajaran: Kuliah, Responsi, Tutorial, Seminar atau yang setara, Praktikum, Praktik Studio, Praktik Bengkel, Praktik Lapangan, Penelitian, Pengabdian Kepada Masyarakat dan/atau bentuk pembelajaran lain yang setara.
9. Metode Pembelajaran: *Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning*, dan metode lainnya yg setara.
10. Materi Pembelajaran adalah rincian atau uraian dari bahan kajian yg dapat disajikan dalam bentuk beberapa pokok dan sub-pokok bahasan.
11. Bobot penilaian adalah prosentasi penilaian terhadap setiap pencapaian sub-CPMK yang besarnya proposional dengan tingkat kesulitan pencapaian sub-CPMK tsb., dan totalnya 100%.
12. **TM**=Tatap Muka, **PT**=Penugasan Terstruktur, **BM**=Belajar Mandiri.