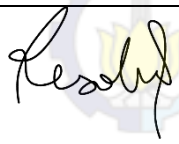
MODULE HANDBOOK
INTRODUCTION TO ELECTRICAL TECHNOLOGY

BACHELOR DEGREE PROGRAM
DEPARTMENT OF BIOMEDICAL ENGINEERING
FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

ENDORSEMENT PAGE

MODULE HANDBOOK
Introduction to Electrical Technology
DEPARTMENT OF BIOMEDICAL ENGINEERING
INSTITUT TEKNOLOGI SEPULUH NOPEMBER
Number : 6859/IT2.IX.5.1.2/B/PP.03.00.00/2023

Proses ***Process***	**Penanggung Jawab** ***Person in Charge***			**Tanggal** ***Date***
	Nama ***Name***	**Jabatan** ***Position***	**Tandatangan** ***Signature***	
Perumus *Preparation*	Prof. Dr. Ir. Mohammad Nuh, DEA.	Dosen *Lecturer*	**TTD**	**November 18, 2022**
Pemeriksa dan Pengendalian *Review and Control*	Dr. Didik Khusnul Arif, S.Si, M.Si	Tim kurikulum *Curriculum team*	**TTD**	**November 20, 2022**
Persetujuan *Approval*		Koordinator RMK *Course Cluster Coordinator*	**TTD**	**April 13, 2023**
Penetapan *Determination*	Dr. Achmad Arifin, S.T., M.Eng.	Kepala Departemen *Head of Department*		**April 17, 2023**

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MODULE HANDBOOK
INTRODUCTION TO ELECTRICAL TECHNOLOGY

Module name	**Introduction to Electrical Technology**	
Module level	Undergradute	
Code	EE234101	
Course (if applicable)	Introduction to Electrical Technology	
Semester	First Semester (Gasal)	
Person responsible for the module	Nada Fitrieyatul Hikmah, S.T., M.T.	
Lecturer	Dr. Margo Pujiantara Tasripan MT Dr. M. Rameli Prof. Dr. Gamantyo Hendrantoro Prof. M. Nuh Prof. Yoyon Kusnendar	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergradute degree program, **mandatory**, 1st semester.	
Type of teaching, contact hours	Lectures, <60 students	
Workload	1. Lectures : 2 x 50 = 100 minutes per week. 2. Exercises and Assignments : 2 x 60 = 120 minutes per week. 3. Private learning : 2 x 60 = 120 minutes per week.	
Credit points	2 credit points (sks)	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Mandatory prerequisites	-	
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module, CLO 1: Students understand the introductory material of power system engineering. CLO 2: Students understand the introductory material of control system engineering. CLO 3: Students understand the introductory material of electronics.	PLO-09 PLO-09 PLO-09

	CLO 4: Students understand the introductory material of telecommunication engineering. CLO 5: Students understand the introductory material of computer engineering CLO 6: Students understand the introductory material of biomedical engineering. CLO 7: Students understand the history and timeline of electrical technology. CLO 8: Students understand the basic electrical and magnetical phenomenon. CLO 9: Students understand the role of physics and mathematics in electrical technology. CLO 10: Students understand the impact of electrical technology on the development of civilization. CLO 11: Students understand the importance of creativity for electrical technology undergraduates in the face of technological developments. CLO 12: Students understand the impotance of integrity for electrical technology undergraduates.	PLO-09 PLO-09 PLO-11 PLO-09 PLO-09 PLO-11 PLO-11 PLO-11
Content	Introduction to Electical Technology course studies about fundamentals of electrical technology which include the introductory material of power system engineering, control system engineering, electronics, telecommunication engineering, computer engineering, and biomedical engineering also include the history and impact of electrical technology to civilization, role of physics and mathematics in electrical technology, and the importance of creativity and integrity for electrical technology undergraduates.	
Study and examination requirements and forms of examination	● In-class exercises ● Assignment 1, 2, 3 ● Mid-term examination ● Final examination	
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.	
Reading list	Main : 1. Anthonie Meijers, Philosophy of Technology and Engineering 2. Sciences, Elsevier, 2009. Clive Maxfield dkk, Electrical Engineering, Elsevier, 2008. 3. Don Johnson, J. D. Wise, Fundamentals of Electrical Engineering, University Press of Florida, 2009. 4. Charles Gross, Thaddeus Roppel, Fundamentals of Electrical Engineering, Taylor and Francis, 2012. 5. Stan Gibilisco, Teach Yourself Electricity and Electronics, ed. 4, McGraw-Hil, 2006.	

I. Rencana Pembelajaran Semester / *Semester Learning Plan*

	INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS) **FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY** **DEPARTMENT OF BIOMEDICAL ENGINEERING**						**Document Code**
SEMESTER LEARNING PLAN							
MATA KULIAH (MK) ***COURSE***	**KODE** ***CODE***	**Rumpun MK** ***Course Cluster***	**BOBOT (sks)** **Credits**		**SEMESTER**	**Tgl Penyusunan** ***Compilation Date***	
Pengantar Teknologi Elektro dan Informatika Cerdas ***Introduction to Electrical Engineering***	EE234101	Ilmu Dasar Teknik *Basic Engineering*	T=2	P=0	I	Oct 31, 2023	
OTORISASI / PENGESAHAN ***AUTHORIZATION / ENDORSEMENT***	**Dosen Pengembang RPS** ***Developer Lecturer of Semester Learning Plan***		**Koordinator RMK** ***Course Cluster Coordinator***		**Ka DEPARTEMEN** ***Head of Department***		
	(Nada Fitrieyatul Hikmah, S.T, M.T)		**(Dr. Norma Hermawan, S.T., M.Sc.)**		**(Dr. Achmad Arifin, S.T., M.Eng.)**		
Capaian Pembelajaran ***Learning Outcomes***	**CPL-PRODI yang dibebankan pada MK** ***PLO Program Charged to The Course***						
	CPL-09 *PLO-09*	Mampu **mengetahui/mengikuti** perkembangan terkini dibidang ilmu pengetahuan dan teknologi serta **menyikapinya** secara **obyektif** dengan mengedepankan nilai-nilai kebenaran universal *Able to **know / follow** the latest developments in the field of science and technology and to **react objectively** by promoting the values of universal truth.*						
	CPL-11 *PLO-11*	Mampu **memahami** kebutuhan akan pembelajaran sepanjang hayat *Able to **understand** the need for lifelong learning.*					
	Capaian Pembelajaran Mata Kuliah (CPMK) ***Course Learning Outcome (CLO) - If CLO as description capability of each Learning Stage in the course, then CLO = LLO***						
	CP MK 1	Mahasiswa memahami materi pengantar teknik sistem tenaga.					

	CLO 1	*Students understand the introductory material of power system engineering.*
	CP MK 2 ***CLO 2***	Mahasiswa memahami materi pengantar teknik sistem pengaturan. *Students understand the introductory material of control system engineering.*
	CP MK 3 ***CLO 3***	Mahasiswa memahami materi pengantar elektronika. *Students understand the introductory material of electronics.*
	CP MK 4 ***CLO 4***	Mahasiswa memahami materi pengantar teknik telekomunikasi. *Students understand the introductory material of telecommunication engineering.*
	CP MK 5 ***CLO 5***	Mahasiswa memahami materi pengantar teknik komputer. *Students understand the introductory material of computer engineering.*
	CP MK 6 ***CLO 6***	Mahasiswa memahami materi pengantar teknik biomedik. *Students understand the introductory material of biomedical engineering.*
	CP MK 7 ***CLO 7***	Mahasiswa memahami sejarah dan timeline teknologi elektro. *Students understand the history and timeline of electrical technology.*
	CP MK 8 ***CLO 8***	Mahasiswa memahami dasar fenomena listrik dan magnet. *Students understand the basic electrical and magnetical phenomenon.*
	CP MK 9 ***CLO 9***	Mahasiswa memahami peran fisika dan matematika dalam teknologi elektro. *Students understand the role of physics and mathematics in electrical technology.*
	CP MK 10 ***CLO 10***	Mahasiswa memahami dampak teknologi elektro terhadap perkembangan peradaban. *Students understand the impact of electrical technology on the development of civilization.*
	CP MK 11 ***CLO 11***	Mahasiswa memahami pentingnya kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi. *Students understand the importance of creativity for electrical technology undergraduates in the face of technological developments.*
	CP MK 12 ***CLO 12***	Mahasiswa memahami pentingnya integritas bagi sarjana teknologi elektro. *Students understand the impotance of integrity for electrical technology undergraduates.*

Peta CPL – CP MK

Map of PLO - CLO

	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 / SUB CPMK 1 *CLO 1 / LLO 1*									√			
CPMK 2 / SUB CPMK 2 *CLO 2 / LLO 2*									√			
CPMK 3 / SUB CPMK 3 *CLO 3 / LLO 3*									√			
CPMK 4 / SUB CPMK 4 *CLO 4 / LLO 4*									√			
CPMK 5 / SUB CPMK 5 *CLO 5 / LLO 5*									√			
CPMK 6 / SUB CPMK 6 *CLO 6 / LLO 6*									√			
CPMK 7 / SUB CPMK 7 *CLO 7 / LLO 7*											√	
CPMK 8 / SUB CPMK 8 *CLO 8 / LLO 8*									√			
CPMK 9 / SUB CPMK 9 *CLO 9 / LLO 9*									√			

	CPMK 10 / SUB CPMK 10 *CLO 10 / LLO 10*											√	
	CPMK 11/ SUB CPMK 11 *CLO 11 / LLO 11*											√	
	CPMK 12 / SUB CPMK 12 *CLO 12 / LLO 12*											√	

Diskripsi Singkat MK ***Short Description of Course***	Mata kuliah Pengantar Teknologi Elektro membahas dasar-dasar teknologi elektro yang meliputi materi pengantar ke teknik sistem tenaga, teknik sistem pengaturan, elektronika, teknik telekomunikasi,teknik komputer, dan teknik biomedik serta sejarah dan dampak teknologi elektro bagi peradaban, peran fisika dan matematika dalam teknologi elektro, dan pentingnya kreativitas dan integritas bagi sarjana teknologi elektro. *Introduction to Electical Technology course studies about fundamentals of electrical technology which include the introductory material of power system engineering, control system engineering, electronics, telecommunication engineering, computer engineering, and biomedical engineering also include the history and impact of electrical technology to civilization, role of physics and mathematics in electrical technology, and the importance of creativity and integrity for electrical technology undergraduates.*
Bahan Kajian: Materi pembelajaran ***Course Materials:***	1. Pengantar teknik sistem tenaga / *Introduction of power system engineering* 2. Pengantar teknik sistem pengaturan / *Introduction of control system engineering* 3. Pengantar elektronika / *Introduction of electronics* 4. Pengantar teknik telekomunikasi / *Introduction of telecommunication engineering* 5. Pengantar teknik komputer / *Introduction of computer engineering* 6. Pengantar teknik biomedika / *Introduction of biomedical engineering* 7. Sejarah/timeline teknologi elektro (Volta, Ohm, Kelvin, Faraday, Biot Savart, Laplace, Ampere, Maxwell, dan seterusnya) / *History and the timeline of electrical technology (Volta, Ohm, Kelvin, Faraday, Bio-Savart, Laplace, Ampere, Maxwell, etc.)* 8. Dasar fenomena listrik dan magnet (elektron, arus listrik, listrik magnet, batere, dst) / *Basic of electrical and magnetical phenomenon (electrons,*

	electrical current, electrical magnet, battery, etc.) 9. Fisika dan matematika dalam teknologi elektro (fenomena fisika dari elektro, pemodelan matematika untuk sinyal dan sistem dalam teknologi elektro) / *Physics and mathematics in electrical technology (physics phenomenon from electrical, mathematical modelling for signal and system in electrical technology)* 10. Dampak teknologi elektro terhadap perkembangan peradaban (transportasi, dsb) / *Impact of electrical technology to civilization development (transportation, etc.)* 11. Kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi (memiliki penguasaan dasar yang kuat) / *Creativity for electrical technology undergraduates in the face of technological development (have a hard basic mastery)* 12. Kode etik dan integritas bagi sarjana teknologi elektro (pengakuan terhadap hasil karya orang lain, upaya mandiri dalam menyelesaikan permasalahan, dst) / *Ethics code and integrity for electrical technology undergraduates (recognition of the work of others, be independent in solving problems, etc.)*
Pustaka ***References***	**Utama / *Main*:** 1. Anthonie Meijers, Philosophy of Technology and Engineering 2. Sciences, Elsevier, 2009. Clive Maxfield dkk, Electrical Engineering, Elsevier, 2008. 3. Don Johnson, J. D. Wise, Fundamentals of Electrical Engineering, University Press of Florida, 2009. 4. Charles Gross, Thaddeus Roppel, Fundamentals of Electrical 5. Engineering, Taylor and Francis, 2012. 6. Stan Gibilisco, Teach Yourself Electricity and Electronics, ed. 4, McGraw-Hil, 2006. **Pendukung / *Supporting*:**
Dosen Pengampu ***Lecturers***	Dr. Margo Pujiantara Tasripan MT Dr. M. Rameli Prof. Dr. Gamantyo Hendrantoro

	Prof. M. Nuh Prof. Yoyon Kusnendar
Matakuliah syarat ***Prerequisite***	-

Mg ke/ ***Week***	**Kemampuan akhir tiap tahapan belajar (Sub-CPMK) /** ***Final ability of each learning stage (LLO)***	**Penilaian /** ***Assessment***		**Bantuk 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	Memahami materi pengantar teknik sistem tenaga. *Students understand the introductory material of power system engineering.*	Mampu menjelaskan materi pengantar system tenaga. *Able to explain the introductory material of power system engineering.*	**Non-tes :** **Tugas 1 :** Penyelesaian soal ***Non-test :*** ***Task 1 :*** *Problem solving*	• Kuliah dan brainstorming , tanya jawab. [TM : 2 x 50”] [BM : 2 x 60”] [PT : 2 x 60”] • *Presentation and brainstorming , ask and answer.* *[FF : 2 x 50”]* *[SA : 2 x 60”]* *[SS : 2 x 60”]*	• Chatting dan diskusi dalam forum platform ITS. • *Chat and discussion in ITS platform forum.*	Materi pengantar teknik sistem tenaga. *Introductory material of power system engineering*.	**10**
2	Mahasiswa memahami materi pengantar teknik sistem pengaturan.	Mampu menjelaskan materi pengantar teknik sistem pengaturan.	**Non-tes :** **Tugas 2 :** Penyelesaian soal	• Kuliah, diskusi, tanya jawab, latihan soal, tugas.		Materi pengantar teknik sistem pengaturan.	**10**

	Students understand the introductory material of control system engineering.	*Able to explain the introductory material of control system engineering.*	***Non-test :*** ***Task 2 :*** *Problem solving*	[TM : 2 x 50”] [BM : 2 x 60”] [PT : 2 x 60”] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50”] [SA : 2 x 60”] [SS : 2 x 60”]*		*Introductory material of control system engineering.*	
3	Mahasiswa memahami materi pengantar elektronika. *Students understand the introductory material of electronics.*	Mampu menjelaskan materi pengantar elektronika. *Able to explain the introductory material of electronics.*	**Non-tes :** **Tugas 3 :** - Penyelesaian soal - Membuat kurva daya terima vs jarak menggunakan matlab. . ***Non-test :*** ***Task 3 :*** - *Problem solving* - *Draw a power vs distance curve using matlab*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50”] [BM : 2 x 60”] [PT : 2 x 60”] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50”] [SA : 2 x 60”] [SS : 2 x 60”]*		Materi pengantar elektronika. *Introductory material of electronics.*	**10**

4	Mahasiswa memahami materi pengantar teknik telekomunikasi. *Students understand the introductory material of telecommunication engineering.*	Mampu menjelaskan materi pengantar teknik telekomunikasi. *Able to explain the introductory material of telecommunication engineering.*	**Non-tes :** **Tugas 4 :** Penyelesaian soal ***Non-test :*** ***Task 4 :*** *Problem solving*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50"] [BM : 2 x 60"] [PT : 2 x 60"] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50"] [SA : 2 x 60"] [SS : 2 x 60"]*		Materi pengantar teknik telekomunikasi. *Introductory material of telecommunication.*	**10**
5	Mahasiswa memahami materi pengantar teknik komputer *Students understand the introductory material of computer engineering.*	Mampu menjelaskan materi pengantar teknik komputer. *Able to explain the introductory material of computer engineering.*	**Non-tes :** **Tugas 5 :** Penyelesaian soal ***Non-test :*** ***Task 5 :*** *Problem solving*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50"] [BM : 2 x 60"] [PT : 2 x 60"] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50"] [SA : 2 x 60"]*		Materi pengantar teknik komputer. *Introductory material of computer engineering.*	**10**

				[SS : 2 x 60”]			
6	Mahasiswa memahami materi pengantar teknik biomedik. *Students understand the introductory material of biomedical engineering.*	Mampu menjelaskan materi pengantar teknik biomedik. *Able to explain the introductory material of computer engineering.*	**Non-tes :** **Tugas 6 :** Penyelesaian soal ***Non-test :*** ***Task 6 :*** *Problem solving*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50”] [BM : 2 x 60”] [PT : 2 x 60”] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50”] [SA : 2 x 60”] [SS : 2 x 60”]*		Materi pengantar teknik biomedik. *Introductory material of biomedical engineering.*	**10**
7-8	Mahasiswa memahami sejarah dan timeline teknologi elektro. *Students understand the history and timeline of electrical technology.*	Mampu menjelaskan sejarah dan timeline teknologi elektro. *Able to explain the history and timeline of electrical technology.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas 2 x [TM : 2 x 50”] 2 x [BM : 2 x 60”] 2 x [PT : 2 x 60”] • *Presentation, discussion, ask and answer,*		Sejarah/timeline teknologi elektro (Volta, Ohm, Kelvin, Faraday, Biot Savart, Laplace, Ampere, Maxwell, dan seterusnya) *History and the timeline of electrical technology (Volta, Ohm, Kelvin, Faraday,*	**10**

				exercise, assignment *2 x [FF : 2 x 50”]* *2 x [SA : 2 x 60”]* *2 x [SS : 2 x 60”]*		*Bio-Savart, Laplace, Ampere, Maxwell, etc.)*	
9-10	Mahasiswa memahami dasar fenomena listrik dan magnet. *Students understand the basic electrical and magnetical phenomenon.*	Mampu menjelaskan dasar fenomena listrik dan magnet *Able to explain the basic electrical and magnetical phenomenon.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas 2 x [TM : 2 x 50”] 2 x [BM : 2 x 60”] 2 x [PT : 2 x 60”] • *Presentation, discussion, ask and answer, exercise, assignment* *2 x [FF : 2 x 50”]* *2 x [SA : 2 x 60”]* *2 x [SS : 2 x 60”]*		Dasar fenomena listrik dan magnet (elektron, arus listrik, listrik magnet, batere, dst) *Basic of electrical and magnetical phenomenon (electrons, electrical current, electrical magnet, battery, etc.)*	**10**

11 -12	Mahasiswa memahami peran fisika dan matematika dalam teknologi elektro. *Students understand the role of physics and mathematics in electrical technology.*	Mampu menjelaskan peran fisika dan matematika dalam teknologi elektro. *Able to explain the role of physics and mathematics in electrical technology.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion.*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas 2 x [TM : 2 x 50”] 2 x [BM : 2 x 60”] 2 x [PT : 2 x 60”] • *Presentation, discussion, ask and answer, exercise, assignment* *2 x [FF : 2 x 50”]* *2 x [SA : 2 x 60”]* *2 x [SS : 2 x 60”]*		• Fenomena fisika dari elektro • Pemodelan matematika untuk sinyal dan sistem dalam teknologi elektro • *Physics phenomenon from electrical* • *Mathematical modelling for signal and system in electrical technology)*	**10**
13	Mahasiswa memahami dampak teknologi elektro terhadap perkembangan peradaban.	Mampu menjelaskan dampak teknologi elektro terhadap perkembangan peradaban.	**Non-tes :** Diskusi dalam kelas	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50”] [BM : 2 x 60”] [PT : 2 x 60”]		Dampak teknologi elektro terhadap perkembangan peradaban (transportasi, dsb)	**5**

	Students understand the impact of electrical technology on the development of civilization.	*Able to explain the impact of electrical technology on the development of civilization.*	***Non-test :*** *In class discussion.*	• *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50"] [SA : 2 x 60"] [SS : 2 x 60"]*		*Impact of electrical technology to civilization development (transportation, etc.)*	
14	Mahasiswa memahami pentingnya kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi. *Students understand the importance of creativity for electrical technology undergraduates in the face of technological developments.*	Mampu menjelaskan pentingnya kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi. *Able to explain the importance of creativity for electrical technology undergraduates in the face of technological developments.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion.*	• Kuliah, diskusi, tanya jawab, latihan soal, tugas [TM : 2 x 50"] [BM : 2 x 60"] [PT : 2 x 60"] • *Presentation, discussion, ask and answer, exercise, assignment [FF : 2 x 50"] [SA : 2 x 60"] [SS : 2 x 60"]*		Kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi (memiliki penguasaan dasar yang kuat) *Creativity for electrical technology undergraduates in the face of technological development (have a hard basic mastery)*	**5**
15-16	**EVALUASI AKHIR SEMESTER** ***FINAL-SEMESTER EXAM***						

TM=Tatap Muka, **PT**=Penugasan Terstuktur, **BM**=Belajar Mandiri.
***FF** = Face to Face, **SA** = Structured Assignment, **SS** = Self Study.*

II. Rencana Asesmen & Evaluasi (RAE) / *Assessment & Evaluation Plan*

	ASSESSMENT & EVALUATION PLAN BACHELOR DEGREE PROGRAM OF BIOMEDICAL ENGINEERING - FTEIC ITS **Course : Introduction to Electrical Technology**		**RA&E** Write Doc Code
Kode/*code*: **EE234101**	**Bobot sks/*credits* (T/P): 2/0**	**Rumpun MK: Ilmu Dasar Teknik** ***Course Cluster: Basic Engineering***	Smt: I
OTORISASI ***AUTHORIZATION***	**Penyusun RA & E** ***Compiler A&EP*** **Nada Fitrieyatul H, S.T, M.T**	**Koordinator RMK** ***Course Cluster Coordinator*** **Dr. Norma Hermawan, S.T., M.Sc.**	**Ka DEP** ***Head of DEP*** **Dr. Achmad Arifin, S.T., M.Eng.**

Mg ke/ *Week* (1)	**Sub CP-MK / *Lesson Learning Outcomes (LLO)* (2)**	**Bentuk Asesmen (Penilaian) *Form of Assessment* (3)**	**Bobot / *Load* (%) (4)**
1	**Sub CP-MK 1:** Memahami materi pengantar teknik sistem tenaga. ***LLO 1:*** *Students understand the introductory material of power system engineering.* Mahasiswa memahami cara merepresentasikan data berdasarkan karakteristiknya.	**Non-tes :** **Tugas 1 :** Penyelesaian soal ***Non-test :*** ***Task 1 :*** *Problem solving*	10
2	**Sub CP-MK 2:** Mahasiswa memahami materi	**Non-tes :** **Tugas 2 :** Penyelesaian soal	10

	pengantar teknik sistem pengaturan. *Students understand the introductory material of control system engineering.*	***Non-test :*** ***Task 2 :*** *Problem solving*	
3	**Sub CP-MK 3:** Mahasiswa memahami materi pengantar elektronika. ***LLO 3:*** *Students understand the introductory material of electronics.*	**Non-tes :** **Tugas 3 :** - Penyelesaian soal - Membuat kurva daya terima vs jarak menggunakan matlab. . ***Non-test :*** ***Task 3 :*** - *Problem solving* *Draw a power vs distance curve using matlab)*	10
4	**Sub CP-MK 4:** Mahasiswa memahami materi pengantar teknik telekomunikasi. ***LLO 4:*** *Students understand the introductory material of telecommunicatio n engineering.*	**Non-tes :** **Tugas 4 :** Penyelesaian soal ***Non-test :*** ***Task 4 :*** *Problem solving*	10
5	**Sub CP-MK 5:** Mahasiswa memahami materi pengantar teknik komputer ***LLO 5:*** *Students understand the introductory*	**Non-tes :** **Tugas 5 :** Penyelesaian soal ***Non-test :*** ***Task 5 :*** *Problem solving*	10

	material of computer engineering.		
6	**Sub CP-MK 6:** Mahasiswa memahami materi pengantar teknik biomedik. ***LLO 6:*** *Students understand the introductory material of biomedical engineering.*	**Non-tes :** **Tugas 6 :** Penyelesaian soal ***Non-test :*** ***Task 6 :*** *Problem solving*	10
7-8	**Sub CP-MK 7:** Mahasiswa memahami sejarah dan timeline teknologi elektro. ***LLO 7:*** *Students understand the history and timeline of electrical technology.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	10
9-10	**Sub CP-MK 8:** Mahasiswa memahami dasar fenomena listrik dan magnet. ***LLO 8:*** *Students understand the basic electrical and magnetical phenomenon.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	10
11-12	**Sub CP-MK 9:** Mahasiswa memahami peran fisika dan	**Non-tes :** Diskusi dalam kelas	10

	matematika dalam teknologi elektro. ***LLO 9:*** *Students understand the role of physics and mathematics in electrical technology.*	***Non-test :*** *In class discussion*	
13	**Sub CP-MK 10:** Mahasiswa memahami dampak teknologi elektro terhadap perkembangan peradaban. ***LLO 10:*** *Students understand the impact of electrical technology on the development of civilization.*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	5
14	**Sub CP-MK 11:** Mahasiswa memahami pentingnya kreativitas bagi sarjana teknologi elektro dalam menghadapi perkembangan teknologi. ***LLO 11:*** *Students understand the importance of creativity for electrical technology undergraduates in the face of*	**Non-tes :** Diskusi dalam kelas ***Non-test :*** *In class discussion*	5

	technological developments.		
16	**Evaluasi Akhir** ***Final Exam***	**Tes:** Ujian Tulis/Ujian Daring ***Test:*** *Writing Exams / Online Exams*	
		Total bobot penilaian ***Total assessment load***	**100%**

- **Indikator Pencapaian CPL Pada MK / *Indicator of PLO achievement charged to the course***

CPL yang dibebankan pada MK / *PLO charged to the course*	**CPMK / *Course Learning Outcome (CLO)***	**Minggu ke / *Week***	**Bentuk Asesmen / *Form of Assessment***	**Bobot / *Load* (%)**
CPL-09 / *PLO-09*	CPMK 1 / *CLO 1*	*Week- 1*	*Task 1*	10
	CPMK 2 / *CLO 2*	*Week- 2*	*Task 2*	10
	CPMK 3 / *CLO 3*	*Week- 3*	*Task 3*	10
	CPMK 4 / *CLO 4*	*Week- 4*	*Task 4*	10
	CPMK 5 / *CLO 5*	*Week- 5*	*Task 5*	10
	CPMK 6 / *CLO 6*	*Week- 6*	*Task 6*	10
	CPMK 8 /*CLO 8*	*Week- 9*	*Discussion*	10
		Week- 10		
	CPMK 9 / *CLO 9*	*Week- 11*	*Discussion*	10
		Week- 12		
CPL-11 / *PLO-11*	CPMK 7 / *CLO 7*	*Week- 7*	*Discussion*	10
		Week- 8		
	CPMK 10 / *CLO 10*	*Week- 13*	*Discussion*	5
	CPMK 11 / *CLO 11*	*Week- 14*	*Discussion*	5
	CPMK 12 / *CLO 12*	-	-	-
				∑ = 100%

No	***Form of Assessment***	***PLO-01***	***PLO-02***	***PLO-03***	***PLO-04***	***PLO-05***	***PLO-06***	***PLO-07***	***PLO-08***	***PLO-09***	***PLO-10***	***PLO-11***	***PLO-12***	***Total***
1	*Task 1*									0.1				**0.1**
2	*Task 2*									0.1				**0.1**
3	*Task 3*									0.1				**0.1**
4	*Task 4*									0.1				**0.1**

5	*Task 5*									0.1				**0.1**
6	*Task 6*									0.1				
7	*Discussion*									0.2		**0.2**		**0.4**
	Total									0.8		**0.2**		**1**