MODULE HANDBOOK DESCRIPTION

Module designation	*Electric Power Transmission*
Code	*FBA3102*
Semester(s) in which the module is taught	*5 / third year*
Person responsible for the module	*Agung Budi Muljono, ST., MT.*
Language	*Indonesian*
Relation to curriculum	*Compulsory*
Teaching methods	*lectures, case base method, project base method*
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 Weeks / semester: • Lectures: 2 × 50 minutes. • Exercises and Assignments: 2 × 60 minutes. • Self-learning: 2 × 60 minutes. total study hours = 5 hours 40 minutes/week
Credit points	*2 SKS (~ 3.2 ECTS)*
Required and recommended prerequisites for joining the module	*Basic Electric Power (FBS2126)* *Electrical Circuit II (FBA2122)*
Program Learning Outcomes (PLO)	- *Knowledge (PLO2):* *Able to apply knowledge of science and mathematics, electrical technology, information technology and/or materials technology to gain a thorough understanding of the principles in the field of electrical engineering.* - *Engineering Analysis (PLO3):* *Able to choose methods, make literature reviews, design experiments with simulations, and analyze results to reach the right conclusions, as well as develop guidelines for using tools.* - *Engineering Design (PLO4):* *Able to design and develop components, systems and/or processes to support engineering activities and create technological innovations by optimally utilizing potential resources.*

Module objectives/intended learning outcomes	*1. Students are able to understand of functions, definitions and types of Electrical Power System Components*	*PLO2*
	2. Students are able to understand the hierarchical Structure of the Electric Power System.	*PLO2*
	3. Students are able to determine and calculate electrical parameters on transmission lines	*PLO3*
	4. Students are able to analyze the relationship between voltage and current on a medium transmission line and Long line transmission system model.	*PLO3*
	5. Students are able to analyze voltage drop, power losses and performance in electric transmission lines	*PLO3*
	6. Students are able to analyze the Characteristic impedance and SIL.	*PLO3*
	7. Students are able to analyze the constant of transmission line [A,B,C,D].	*PLO3*
	8. Students are able to design simulate the performance of Series and parallel transmission lines.	*PLO4*
	9. Students are able to analyze Power Flow on the transmission line	*PLO4*
	10. Students are able to design simulate the improved power factor and compensation on transmission lines	*PLO4*
	11. Students are able to design simulate the HVAC system planning and Calculation of coronal and losses and economic aspects	*PLO4*
	12. Students are able to understand of functions, definitions and types of Electrical Power System Components	*PLO2*

Content	1. *Electrical Power System Components.* 2. *Hierarchical Structure of the Electric Power System.* 3. *Parameters of 3-phase AC transmission line.* 4. *Inductance and capacitance of single and beam 3 phase transmission lines.* 5. *The relationship between voltage and current on a transmission line.* 6. *Voltage regulation and efficiency of short and medium transmission lines.* 7. *Long line transmission system model.* 8. *Equation of traveling waves on long transmission lines (hyperbolic function model).* 9. *Characteristic impedance and SIL.* 10. *General constant of transmission line [A,B,C,D].* 11. *Series and parallel transmission lines.* 12. *Power Flow on the transmission line.* 13. *Improved power factor and compensation on transmission lines.* 14. *HVAC system planning.* 15. *Calculation of coronal and losses and economic aspects.*
Examination forms	- *Written case study* - *Written and oral project study* - *Essay midterm and final test*
Study and examination requirements	*The final grade in the module is composed of;* *a. Case I assessment : 15 %* *b. Case II assessment : 15 %* *c. Case III assessment : 20 %* *d. Written Midterm assessment : 20 %* *e. Written Final assessment : 30 %* *Students must have a final grade of 65% or higher to pass*
Reading list	1. Hutahuruk. T.S., 1985, "Transmisi Daya Listrik", Erlangga, Jakarta. 2. Stevenson, W.D., 1993, Analisis Sistem Tenaga Listrik. 3. Saadat H., 2004, "Power System Analysis"Mc Graw Hill, Singapore. 4. Zuhal, 1990, Dasar Teknik Tenaga Listrik.dan Elektronika Daya, Erlangga, Jakarta 5. Arismunandar A dan Kuwara S, 1979, "Buku Pegangan Teknik Tenaga Listrik" Jilid II, Pradnya Paramita, Jakarta. 6. Gonen T., 1988, "Electric Power Transmission System", Mc Graw Hill, Singapore. 7. ....., 1962, "Electrical Transmission and Distribution Reference Book", Westinghouse Electric Corp., East Pittsburgh.