



MODULE HANDBOOK DESCRIPTION

Module designation	Power Systems Protection Laboratory.
Code	FBA4116
Semester(s) in which the module is taught	7 / 4th year
Person responsible for the module	- Sultan, ST., MT. - Supriyatna, ST., MT.
Language	Indonesian
Relation to curriculum	Elective for Electrical Power System Engineering
Teaching methods	- Laboratory Practice
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester: <ul style="list-style-type: none"> • Practice in Laboratory: 3 x 50 minutes total study hours = 2 hours 30 minutes/week
Credit points	1 SKS (~ 1.6 ECTS)
Required and recommended prerequisites for joining the module	- Power System Analysis II (FBA3208) - Power System Protection (FBA4115)
Program Learning Outcomes (PLO)	<ol style="list-style-type: none"> 1. Experiment (PLO5) Able to design and carry out experiments using basic and modern engineering tools as well as analyse and interpret data based on the correct methodology to strengthen engineering assessment. 2. Engineering Design (PLO4) Able to design and develop components, systems and/or processes to support engineering activities and create technological innovation by optimally utilizing potential resources. 3. Engineering Analysis (PLO3) Able to choose method, make literature reviews, design experiments with simulations, and analyse result to reach the right conclusion, as well as develop guidelines for using tools.

Module objectives/intended learning outcomes	1. <i>Student are able to carry out experiment of under voltage and over voltage relay based on the right design and analyse of experimental results</i>	<p><i>PLO5</i></p> <p><i>PLO4</i></p> <p><i>PL03</i></p>
	2. <i>Student are able to carry out experiment of definite overcurrent relay based on the right design and analyse of experimental results</i>	
	3. <i>Student are able to carry out experiment of earth fault relay and directional relay based on the right design and analyse of experimental results</i>	
	4. <i>Student are able to carry out experiment of power directional relay based on the right design and analyse of experimental results</i>	
Content	<ol style="list-style-type: none"> 1. <i>Under and Over Voltage Relay</i> 2. <i>Definite Overcurrent Relay</i> 3. <i>Earth Fault Relay and Directional Relay</i> 4. <i>Power Directional Relay</i> 	
Examination forms	<ul style="list-style-type: none"> - <i>Oral pre-test</i> - <i>Practicum Application Form</i> - <i>Lab. Report;</i> - <i>Writing and oral post-test</i> 	
Study and examination requirements	<p><i>The final grade in the module is composed of:</i></p> <ol style="list-style-type: none"> a. <i>Pre-test: 10 %</i> b. <i>Lab. report: 40%</i> c. <i>Attitude during lab practice: 20%</i> d. <i>Post-test: 30%</i> <p><i>Students must have a final grade of 65% or higher to pass</i></p>	
Reading list	<ol style="list-style-type: none"> 1. Supriyatna, editor., 2020, <i>Practicum Guide of Power System Protection, Electric Power System Lab., University of Mataram</i> 2. Walter A. Elmore, edited, 1994, <i>Protective Relaying Theory and Applications</i>, ABB- Marcel Dekker 3. Anderson, P. M., 2001, <i>Power System Protection</i>, IEEE Press, 4. <i>Protective Relays Application Guide</i>, 1975, The General Electric Company (GEC) 5. J. Lewis Blackburn, 1998, <i>Protective Relaying, Principles and Applications, second edition</i>, Marcel Dekker 	

