



MODULE HANDBOOK DESCRIPTION

Module designation	Power Electronics	
Code	FBA3106	
Semester(s) in which the module is taught	5 / third year	
Person responsible for the module	I Made Ari Nrartha, S.T., M.T.	
Language	Indonesian	
Relation to curriculum	Elective for Electrical Power System Engineering	
Teaching methods	Lectures, Discovery Learning, Small Group Discussion, and Project Based Learning.	
Workload (incl. contact hours, self-study hours)	<p>Contact minutes every week, each week of the 16 weeks/semester:</p> <ul style="list-style-type: none"> • Lectures: 2 x 50 minutes • Exercises and Assignments: 2 x 60 minutes • Self-study: 2 x 60 minutes. <p>Total study hours= 5 hours 40 minutes/week</p>	
Credit points	2 SKS (~ 3,2 ECTS)	
Required and recommended prerequisites for joining the module	- Basic Electronics (FBS2125)	
Module objectives/intended learning outcomes	1. Students are able to classify converters, select electronic switch types based on switching frequency, calculate power and energy in sinusoidal and non-sinusoidal AC circuits, and analyze rectifier, inverter, chopper, and cycloconverter circuits.	PLO3
	2. Students are able to design rectifier, inverter, chopper, and cycloconverter circuits for operating electrical loads that are suitable for the voltage and power capacity of the load.	PLO4

	3. Students are able to create computer simulations using MATLAB to test the designs of rectifier, inverter, chopper, and cycloconverter circuits for various electrical loads.	PL05
Content	Introduction to power electronics, power calculation, half wave rectifier, full wave rectifier and three phase rectifier, AC to AC converter/AC voltage control (cyclo-converter), DC to DC converter (DC chopper) and DC to AC converter (inverter).	
Examination forms	<ul style="list-style-type: none"> - Homework, - Written Project, - Présentation Project, - Midterm and final test. 	
Study and examination requirements	<p>The final grade in the module is composed of:</p> <ul style="list-style-type: none"> a. Exercise Report/ Homework/Portofolio: 15% b. Projects: 55% c. Midterm assessment: 15% d. Final assessment: 15% <p>Students must have a final grade of 65% or higher to pass</p>	
Reading list	<ol style="list-style-type: none"> 1. Hart, D., W., 2011, Power Electronics, Prentice-Hall International, Inc., USA. 2. Shaffer, R., 2007, Fundamentals of Power Electronics with MATLAB, Charles River Media, Boston Massachusetts. 3. Dewan, SB., and Sraughen, A., 1975, Power Semiconductor Circuit, John Willey, New York. 4. Rashid, M., 1989, Power Electronics, Prentice Hall. 5. Articles from the journals of the last 5 years on semiconductor technology and its application to power converters. 	