



MODULE HANDBOOK DESCRIPTION

Module designation	Utility & Control of Electric Machine	
Code	FBA0007	
Semester(s) in which the module is taught	6 / third year	
Person responsible for the module	Dr. Ir. I Ketut Wiryajati, ST., MT., IPU., ASEAN.Eng.	
Language	Indonesian	
Relation to curriculum	Free Elective for Electrical Power System Engineering.	
Teaching methods	Lectures, small group discussion, Project base method.	
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester: <ul style="list-style-type: none"> ● Lectures: 2 x 50 minutes ● Exercises and Assignments: 2 x 60 minutes ● Private study: 2 x 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	- Electric Machines (FBA3104) - Control System (FBS 3139)	
Module objectives/intended learning outcomes	1. Students are able to decipher function of electric motor machines	PLO3
	2. Students are able to implement of electric motor in equipment household as well as industry Capable to explain work principle motor, and use the rules left hand /Lorenz and hand rule right / faraday	PLO4 PLO9
	3. Students are able to reconstruct and setting technique motor speed in AC and DC drive.	
	4. Student able to select DC motors and equipment to adjust the speed of DC motors using DC Chopper and controlled rectifiers.	PLO4
	5. Students are able to design DCs chopper. model rectifier under, control and simulate speed settings DC motors use Software	
	6. Students are able to make capital induction motors and Synchronous motors	PLO4
	7. Students are able to design and modeling system arrangement motor speed with settings frequency	

	8. Student is able decipher and reconstruct of principles BLDC motor work with setting technique BLDC motor speed. 9. Students are able design the device hard in settings electric machines 10. Student is able to design the GUI for electric machine setting 11. Student able to design speed drive electric motor setting with interfacing system. 12. Student able to analysis capacity and rating of electric machine.	PLO 3 PLO 4 CPO 9
Content	1. Review the working principles of various types of electric motors (DC motors, induction motors, synchronous motors and BLDC motors) 2. Mechanical speed regulation of electric motors 3. Methods of electric motor braking 4. Modeling electric motors using software 5. Modeling and simulating the speed control system of electric motors 6. Basic considerations in the selection of electric motors 7. Examples of the use of microcontrollers in setting up BLDC motors	
Examination forms	- Collecting a portfolio after finishing each topic, in the form of voice recordings and working on practice assignments. - Midterm and final test.	
Study and examination requirements	The final grade in the module is composed of: 1. The portfolio of 6 topics is 11,67% each, for a total of 70% 2. Midterm assessment: 15% 3. Final assessment: 15% Students must have a final grade of 70% or higher to pass	
Reading list	1. Piotr Wach, 2011, Dynamics and control of electrical drives, Springer. 2. Stephen L. Herman, 2009, Electric Motor Control, 9th Edition, DELMAR Cengage Learning. 3. R. Krishnan 2001, Electric Motor Dries, Modeling, Analysis and Control, Prentice hall 4. Irving Gottlieb, 1997, Practical electric motor handbook, Newness Oxford. 5. Tak Kenjo, 1991, Electric motors and their controls, Oxford science publication. 6. Malcom Barnes, 2003, Variable Speed Drives and Power Electronics, Elsevier	