



**MODULE HANDBOOK DESCRIPTION**

Module designation	Power Systems Operation Management	
Code	FBA4114	
Semester(s) in which the module is taught	7 / forth year	
Person responsible for the module	I Made Ari Nrartha, S.T., M.T.	
Language	Indonesian	
Relation to curriculum	Compulsory for electrical power systems students	
Teaching methods	Lecture, small group discussion, case base method.	
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"> <li>• Lectures: 2 x 50 minutes</li> <li>• Exercises and Assignments: 2 x 60 minutes</li> <li>• Private study: 2 x 60 minutes.</li> </ul> <p>Total study hours = 5 hours 40 minutes/week</p>	
Credit points	2 (~ 3,2 ECTS)	
Required and recommended prerequisites for joining the module	- Power System Analysis I (FBA3101)	
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li>1. Students are able to explain the structure and operating conditions of the power system.</li> <li>2. Students are able to analyse control methods in power system operation.</li> <li>3. Students are able to explain the operating quality of electric power systems.</li> <li>4. Students are able to estimate the safe operation of electric power systems.</li> </ol>	PLO3 and PLO4
	<ol style="list-style-type: none"> <li>5. Students are able to manage the operation of the power system economically.</li> </ol>	PLO3, PLO4 and PLO5

Content	The components of the electric power system, the basic requirements of the operation of the electric power system, the operating conditions of the electric power system, the hierarchical structure of the electric power system, controls on the operation of the power system, active power and frequency control, voltage and reactive power control, operation continuity electric power system, electric power quality and standards, switching safety, steady state safety, power system contingency analysis, automatic generation control (AGC), heat rate curve and cost rate curve, economic dispatch (ED) on power system operation, load frequency control (LFC), ED and LFC coordination, short term load forecasting, unit commitment.
Examination forms	<ul style="list-style-type: none"> <li>- Multiple choice examination and Essay,</li> <li>- Pr�sentation case study.</li> </ul>
Study and examination requirements	<p>The final grade in the module is composed of:</p> <ul style="list-style-type: none"> <li>a. Per-meeting score = 5 % x 16 meeting = 80%</li> <li>b. Exercise Report/ Homework/Portofolio = 20%</li> </ul> <p>Students must have a final grade of 65% or higher to pass</p>
Reading list	<ol style="list-style-type: none"> <li>1. Nrartha, I.M.A., Ginarsa, I.M., Muljono, A.B., 2018, Buku Ajar Manajemen Operasi Sistem Tenaga Listrik, Cetakan Pertama, Mataram University Press, Mataram.</li> <li>2. Beng, G., H., dan Tjing L., T., 1995, "PT. PLN In-House Training Course On Energy Management Systems", PT. PLN (Persero) &amp; Nanyang Technological University Singapore.</li> <li>3. Wood, A. J., 1984, "Power Generation Operation And Control", John Wiley &amp; Sons, Inc., New York.</li> <li>4. Grainger, J.,J., and Stevenson W., D., Jr., 1994, "Power System Analisis", MCGraw-Hill, Inc., New York.</li> <li>5. IEEE-CIGRE Joint Task Force on Stability Terms and Definitions, 2004, "Definition and Classification of Power System Stability", IEEE Transactions on Power Systems.</li> <li>6. IEC, "IEC standard frequencies", ISBN 978-2-88910-067-5.</li> <li>7. SPLN no 1., 1995, "Tegangan-Tegangan Standar", PLN, Jakarta.</li> <li>8. Kirchmayer, L.K., "Economic Operation of Power Systems", John Wiley &amp; Sons, Inc., New York.</li> <li>9. Power System Operations from paper journal.</li> </ol>