

Mata Kuliah Course	Nama MK <i>Name</i>	: Otomasi Sistem : <i>System Automation</i>
	Kode MK <i>Code</i>	: EE184522
	Kredit <i>Credit</i>	: 3 sks
	Semester <i>Semester</i>	: V (Wajib) : <i>V (Compulsory)</i>
	Beban Belajar <i>Workload</i>	: Kuliah : 3 x 50 = 150 menit/minggu Latihan/tugas : 3 x 60 = 180 menit/minggu Belajar mandiri : 3 x 60 = 180 menit/minggu <i>Lectures : 3 x 50 = 150 min/week</i> <i>Exercises/Assignments : 3 x 60 = 180 min/week</i> <i>Self learning : 3 x 60 = 180 min/week</i>
	Tingkatan <i>Module</i> <i>Level</i>	: Sarjana (S1) : <i>Undergraduate</i>
	Penanggung Jawab <i>PIC</i>	: Eka Iskandar, ST, MT
	Pengajar <i>Lecturer</i>	: Eka Iskandar, ST, MT
	Bahasa <i>Language</i>	: Bahasa Indonesia dan Bahasa Inggris : <i>Bahasa Indonesia and English</i>
	Persyaratan dan Peraturan <i>Requirement</i> <i>and</i> <i>Regulation</i>	: Setiap mahasiswa harus menghadiri setidaknya 75% dari jumlah perkuliahan untuk dapat mengikuti ujian : <i>A student must have attended at least 75% of the lectures to sit in the exams</i>

Deskripsi Mata Kuliah

Description of Course

Mata kuliah ini memberikan pemahaman kepada peserta mata kuliah tentang bentuk-bentuk aplikasi sistem otomasi di industri, macam-macam sistem otomasi, prinsip-prinsip pengendalian dan berbagai metode perancangan ladder di bidang otomasi, dan teknologi instrumentasi dan pengendalian proses.

This course provides an understanding to the course participants about the forms of automation system application in the industry, various automation systems, control principles and various design methods of ladder in the field of automation, and instrumentation technology and process control.

CPL Prodi yang Dibebankan

Learning Outcomes

(CPL-03) Mampu mendesain komponen, sistem, dan proses yang logis dan realistis sesuai dengan spesifikasi yang ditentukan dengan mempertimbangkan aspek keselamatan, sosial, budaya, lingkungan, dan ekonomi

(PLO-03) Capable to design logical and realistic components, systems and processes in accordance with specified specifications by considering safety, social, cultural, environmental and economic aspects

(CPL-05) Mampu mengidentifikasi, memformulasikan dan menyelesaikan permasalahan dibidang teknik elektro

(PLO-05) Capable to identify, formulate and solve problems in the field of electrical engineering

(CPL-10) Mampu mengetahui dan menyikapi perkembangan terkini dibidang ilmu pengetahuan dan teknologi dengan mengedepankan nilai-nilai universal

(PLO-10) Capable to know and respond to the latest developments in science and technology by promoting universal values

Capaian Pembelajaran Mata Kuliah

Course Learning Outcomes

(CPMK-01) Menguasai konsep dan prinsip sistem otomasi di industri.

(CLO-01) Mastering the concepts and principles of engineering and make it happen in the form of procedures necessary for the analysis and design of electric power systems, regulatory systems, multimedia telecommunications, or electronics

(CPMK-02) Mampu menganalisis dan merancang sistem otomasi di industry

(CLO-02) Able to analyze and design automation systems in the industry

(CPMK-03) Mampu memberikan konsultasi tentang desain dan pengembangan sistem otomasi di industry

(CLO-03) Able to provide consultation on design and development of industrial automation system

(CPMK-04) Mampu menerapkan berbagai metode perancangan ladder diagram ke peralatan Programmable Logix Controller (PLC)

(CLO-04) Able to apply various design method of ladder diagram to Programmable Logix Controller (PLC) equipment

(CPMK-05) Mampu menerapkan produk – produk teknologi sistem dan pengaturan lainnya

(CLO-05) Ability to apply products technology in system and control other

(CPMK-06) Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri

(CLO-06) Show a responsible attitude towards the work in the field of expertise independently

Topik/Pokok Bahasan

Main Subjects

1. Konsep otomasi sistem
The concept of system automation
 2. Peralatan otomasi sistem
System automation equipment
 3. Perancangan diagram ladder berdasar sequence chart
Design of ladder diagram based on sequence chart
 4. Perancangan diagram ladder berdasar metode cascade
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- Design of ladder diagram based on cascade method*
5. Perancangan diagram ladder berdasar Grafchet
Design of ladder diagram based on Grafchet
6. Perancangan diagram ladder berdasar state diagram
Design of ladder diagram based on State diagram
7. Perancangan diagram ladder berdasar metode huffman
Design of ladder diagram based on Huffman method
8. Perancangan diagram ladder berdasar Petri-Net
Design of ladder diagram based on Petri-net
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Pustaka

Reference(s)

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- [1] D. Pessen, Industrial Automation, Wiley, 1989
[2] S. Baranov, Logic Synthesis for Control Automata, Kluwer Academic Publisher, 1994
[3] Applying Structured Analysis To Automation Systems (Paper 1)
[4] The Principles of State Logic Control (Paper 2)
[5] Tadao Murata, Petri Nets: Properties, Analysis and Applications, Proceedings of the IEEE, vol.77, no 4, April 1989 (paper 3)
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Prasyarat

Prerequisite(s)

EE184404 Dasar Sistem Pengaturan

EE184404 Introduction to Control Systems
