

COURSE	Course Name : SCADA
	Course Code : VI231734
	Credit : 3 SKS
	Semester : VII

DESCRIPTION OF COURSE

The SCADA (Supervisory Control and Data Acquisition) course is one of the mandatory compulsory courses in the Instrumentation Engineering Technology Study Program. This course focuses on the study of SCADA systems, which are used to monitor and control industrial processes or complex infrastructure. The SCADA course aims to provide an in-depth understanding of the concepts, components and applications of SCADA in supervision and control systems. Students are expected to be able to understand SCADA architecture, communication, interface design and SCADA security, and be able to design and implement effective SCADA systems in the field of Instrumentation Engineering

LEARNING OUTCOMES

- Able to manage one's own learning, and develop oneself as a lifelong learner to compete at national and international levels, in order to make a real contribution to solving problems by implementing information and communication technology and paying attention to the principles of sustainability and understanding technology-based entrepreneurship. (CPL-3)
- Able to communicate, write reports and make presentations effectively. (CPL-4)
- Able to select, use and apply appropriate techniques and resources including the use of the latest hardware and software to provide solutions to problems in the field of Instrumentation engineering. (CPL-9)

- Able to understand and evaluate the sustainability impact of Instrumentation engineering technology work on the environment and society. (CPL-11)
- Demonstrate knowledge and understanding of engineering management principles and apply them to own work as both a member and leader in a team to manage projects in a multidisciplinary environment. (CPL-12)

COURSE LEARNING OUTCOME

- Able to understand SCADA and its applications
- Able to understand SCADA Architecture
- Able to understand the protocols used in SCADA systems
- Able to understand sensor systems in SCADA
- Able to understand data base systems
- Able to understand SCADA systems using Programmable Logic Controller (PLC) control
- Able to create SCADA systems

MAIN SUBJECT

- Explanation of SCADA and its applications
- SCADA Architecture
- Protocols used in SCADA systems
- Sensor system in SCADA
- Computer functions in SCADA systems
- Data base system
- SCADA system uses Programmable Logic Controller (PLC) control
- SCADA System Application
- Practice creating SCADA Systems

PREREQUISITES

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REFERENCE

Main:

1. "Supervisory Control and Data Acquisition (SCADA) Systems" oleh Stuart A. Boyer: Buku ini memberikan pemahaman yang komprehensif tentang sistem SCADA, termasuk prinsip dasar, arsitektur, dan komponen-komponennya. Buku ini juga membahas topik-topik seperti komunikasi, pemantauan proses, pengendalian, keamanan, dan studi kasus SCADA.
2. "Industrial Network Security: Securing Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control Systems" oleh Eric D. Knapp dan Joel Langill: Buku ini fokus pada aspek keamanan SCADA dan sistem kontrol industri. Ini menjelaskan ancaman dan risiko keamanan yang terkait dengan SCADA, serta strategi dan teknik perlindungan yang dapat diterapkan untuk melindungi sistem SCADA dari serangan.
3. "SCADA: A Complete Reference" oleh Telemetry and Remote SCADA Solutions (TRSS): Buku ini memberikan penjelasan rinci tentang berbagai aspek SCADA, termasuk konsep dasar, komunikasi, perangkat keras, perangkat lunak, arsitektur sistem, dan pemantauan dan pengendalian proses. Buku ini juga mencakup contoh aplikasi SCADA dalam berbagai industri.
4. "SCADA System Application Guide" oleh Henry M. Paynter: Buku ini memberikan panduan praktis tentang penerapan sistem SCADA. Buku ini mencakup topik-topik seperti konfigurasi perangkat keras, antarmuka manusia-mesin, pemantauan dan pengendalian, serta troubleshooting dan pemeliharaan sistem SCADA.

Supplementary:

1. Journals and conference proceedings: Mengikuti jurnal dan prosiding konferensi terkait dengan SCADA dapat memberikan akses kepada penelitian terbaru dan perkembangan dalam bidang tersebut. Beberapa jurnal yang relevan antara lain "IEEE Transactions on Industrial Informatics", "International Journal of Distributed Sensor Networks", dan "International Journal of SCADA".

Silabus Mata Kuliah
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