



Syllabus

- 1. Course name:** SCADA systems
- 2. Course code:** SCDA430946
- 3. Credits:** 3 credits (3:0:6) (3 lecture periods, 0 lab period, 6 self-study periods per week)

4. Instructors

- Chief lecturer: Assoc. Prof. Dr. Truong Dinh Nhon
- Co-lecturers: Dr. Ta Van Phuong
- Co-lecturers: Dr. Nguyen Van Thai
- Co-lecturers: Dr. Tran Vi Do

5. Course Requirements:

Prerequisite course(s): None

Previous course(s): Programmable Logic Controller; Electrical Circuit; Digital Systems.

6. Course Description

The course on SCADA Systems provides learners knowledge related to the structure, classification and application of the Supervisory Control And Data Acquisition System (SCADA). Operation principle of data acquisition block, industrial communication network, data storage, control, monitoring and alerting functions of SCADA system.

In addition, students are introduced to specific software for design SCADA systems .

7. Learning Outcomes (CLOs)

CLOs	Descriptions	ELO(s) /PI(s)	Compe- tency
	<i>On successful completion of this course students will be able to:</i>		
CLO1	Ability to present and analyze the structure, classification, and application of a Supervisory Control And Data Acquisition System (SCADA)	ELO1/PI1.1	M
CLO2	Ability to analyze and select suitable industrial communication networks for SCADA systems	ELO2/PI2.1	M
CLO3	Ability to read, understand, interpret English documents, perform exercises in English related to SCADA system	ELO5/PI5.2	M
CLO4	Ability to select the right SCADA software for industrial systems and to program for the developed control systems	ELO4/PI4.2	R

8. Content outline

- *Overview of Supervisory Control And Data Acquisition System (SCADA): introduces the structure of SCADA system, some simple SCADA systems and the application of SCADA system in industry.*
- *Introduction of data acquisition unit (DAQ) and control system. Structure, function and application of basic components of DAQ system and control system.*
- *Selecting the right DAQ system and control system for industrial automation systems.*
- *Analysis and selection of industrial communication networks suitable for SCADA systems: Introduction to overview, characteristics and functions, selection and configuration of industrial communication networks.*

- SCADA system design: Main components of SCADA system, SCADA system design requirements, SCADA system design using WinCC, Factory Talk, MC Works64.

9. Teaching Methods

- Powerpoint presentation
- Teamwork

10. Assessment(s)

- Grading scale: 10
- Assessment plan:

No.	Content	CLOs	Competency	Assessment methods	Assessment tools	Weighting %
Formative assessment						50
1.	Analyse the structural, classification and application of SCADA system	CLO1/ PI1.1	M	Assignments	Questions	20
2.	Configuration and programming of industrial communication networks for data transmission in SCADA systems	CLO2/ PI2.1	M	Assignments	Questions	20
3.	Participate in lessons	CLO3/ PI5.2	M	Quizes	Rubric	10
Summative assessment						50
4.	Design a specific SCADA system using the appropriate SCADA software	CLO4/ PI4.2	R	Assignments	Questions	50

11. Learning Materials:

- Textbook(s):
 - [1] *Data Acquisition and Control Handbook*, A guide to Hardware and Software for Computer-based Measurement and Control, Keithley.
- References:
 - [2] *Practical Data Acquisition for Instrumentation and Control System*, John Park and Steve Mackay, 2003.

12. General Information:

Academic Integrity

All students in this class are subject to HCMUTE's Academic Integrity Policy (<http://sao.hcmute.edu.vn/>) and should acquaint themselves with its content and requirements, including a strict prohibition against plagiarism. Any violations will be reported to the Faculty of Electrical and Electronic Engineering Dean's office.

Flexibility Notice

Any information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advanced notice. Students need to regularly update the information of their registered class.

Intellectual Property

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13. Approval Date: <dd/mm/yyyy>

14. Endorsement:

Dean	Head of Department	Chief Lecturer
Assoc. Prof. Dr. Nguyen Minh Tam	Assoc. Prof. Dr. Nguyen Thanh Hai	<i><Full Name></i>

15. Revision History:

1st Revision: <i><dd/mm/yyyy></i>	Lecturer: Head of Department: Assoc. Prof. Dr. Nguyen Thanh Hai
2nd Revision: <i><dd/mm/yyyy></i>	Lecturer: Head of Department: