

Course: Digital Control Systems

Study program:	Professional level 1st cycle study program "Applicative Electrical Engineering"	Študijski program:	Visokošolski strokovni dodiplomski študijski program 1. stopnje Aplikativna elektrotehnika
Code:	64687	Šifra:	64687
Title:	Digital Control Systems	Naslov:	Digitalna krmilja
Year:	3rd	Letnik:	3.
Semester:	Winter	Semester:	zimski
ECTS credits:	5	Kreditne točke ECTS:	5
Lectures (hours):	45	Predavanja (ur):	45
Tutorial (hours):	0	Avditorne vaje (ur):	0
Lab. work (hours):	30	Laboratorijske vaje (ur):	30

Title: Digital Control Systems

Lecturer: Prof. Dr. David Nedeljković

Aim of the course:

Student will learn about digital control system components and their features. He will accomplish knowledge of programmable logic controllers (PLCs), software development environment and user interfaces (HMI). Besides, student will become aware of necessity of clear requirements, perfect documentation and efficient communication among project staff.

Required (pre)knowledge:

Programming fundamentals, digital systems fundamentals.

Contents:

A brief history of control systems.

Areas of programmable logic control application (industry, power engineering, traffic...)

Fundamental and other logical functions: binary, memory, timer, counter.

Application of digital and analog sensors and actuators.

Flowchart and types of control: combination control, step control.

Safety measures.

Concepts and structures of PLCs. Input and output signals, addressing, data types.

Methods of user control software development: statement list (STL), ladder diagram (LAD), function block diagram (FBD).

Software development tools for user control program development and user interface design.

Supervisory Control And Data Acquisition (SCADA) systems.

Communication among PLCs and other intelligent peripherals.

Selected references:

Hans Berger: Automating with STEP7 in STL and SCL, Publicis MCD Verlag, Erlangen, 2000.

Heinrich Lepers: SPS-Programmierung nach IEC 61131-3. Mit Beispielen für CoDeSys und Step 7, Franzis PC und Elektronik, 2007.