Hochschule Esslingen
University of Applied Sciences

Module 620 Automation Systems

1	Module Code	Degree Program / Target Group(s)	Semester	Starts in the	Duration	Module Type	Workload (h)	ECTS Credits
	620	WNB	4	☒Winter Term ☒ Summer T.	1 Semester	Mandatory	150	5

2	Courses	Type of Instruction / Form of Learning	Language of Instruction	Contact Time (h) weekly | total	Self Study (h)	ECTS Credits
	a) Automation systems	Lecture	English	4 60	60	4
	b) Automation systems laboratory	Laboratory	English	1 15	15	1

3	Table of Qualifications	Expertise	Methodological Skills	Personal & Social Skills
	Knowledge & Understanding	☒	☒	☒
	Applying Knowl. & Understanding	☒	☒	☐
	Making Judgements & Analyzing	☐	☐	☐
	Creating & Extending Knowledge	☒	☐	☐

4 **Learning Outcomes and Competences**

On completion of the module the students are expected to be able to:

Knowledge and Understanding (Knowledge)

- The importance of control engineering in production automation
- The fundamental terms and engineering standards of industrial control techniques
- The methods of displaying control tasks
- The structure and mode of operation of programmable logic controls (PLC)
- The programming languages „Kontaktplan (KOP), „ Funktionsplan (FUP), and instrucions list (Anwendungsliste AWL) according to IEC 61131
- Handle SPC (stored program control) programming systems

Applying Knowledge and Understanding (Skills)

- Planning of control tasks systematically according to a device-related description using different methods
- Transforming and testing of systematically displayed control tasks to “KOP”, “FUP” and “AWL” according to IEC 61131

Making Judgements and Analyzing (Competences)

- Gathering of complex control tasks, programming of a modular control program according to a systematic description respecting the aspects of reusability of software modules
- Analyzing and evaluating of a given program in a team. Students learn to discuss objectively in controversial situations.

Creating and Extending Knowledge (Competences)

-

5 **Syllabus/Contents**

- System design
- Motion control
- Systems and components in automation and production engineering
- Industrial communication and web-technologies
- Digital picture processing
- Power engines
- Software-Engineering and real-time operating systems

6 **Prerequisites**

According to the Examination Regulations (Studien- und Prüfungsordnung):

- None

Recommended:

- none

7 **Type of Assessment (Examinations) and Requirements for Credits**

written exam (90 minutes)

Module 620 Automation Systems

8	**Module can be used in the following Degree Programs** WNB
9	**Module Director and other Lecturers involved** Prof. Dr.-Ing. Ulrich Nepustil
10	**Recommended Reading** • Wellenreuther, G., Zastrow, D.: Automatisieren mit SPS, Vieweg, 2005 • Berger, H.: Automating with STEP 7 in STL and SCL, Publicis Corporate Publishing, 2006 • Berger, H.: Automating with STEP 7 in LAD and FBD, Publicis Corporate Publishing, 2005
11	**Contribution of the Module to the Educational Aims of the Degree Program**
12	**Date of last Modifications** 11.07.2016