Computer Systems					**AR-103**
Rota annually WS	**Duration** 1 Semester	**Semester** 1st (Semester)	**SWS** 4 SWS	**Credit Points** 6	**Workload** 180 h

1	**Modul Structure**				
	Course (Abbreviation)	**Type/ SWS**	**Presence**	**Self Study**	**Credit Points**
	a) Computer Systems (CS)	Lecture/ 3 SWS	35 h	85 h	4
	b) Computer Systems (CS)	Tutorial/ 1 SWS	15 h	45 h	2

2 **Language**
English

3 **Content**

1. Microprocessors: Processor performance, instruction set, compilers, pipelining, and superscalar architectures
2. torage Technology: SRAM, DRAM, ROM, magnetic recording, optical recording
3. Data Communication: Bus systems, Ethernet, TCP/IP
4. Memory Hierarchy: Caches, virtual memory, RAID systems

Literature:

- General, Communication within Computer Systems: John L. Hennessy, David A. Patterson, "Computer Architecture, a Quantitative Approach", 3rd Edition, Morgan Kaufmann, 2002
- Semiconductor memory: Betty Prince, "High Performance Memories", Wiley, 1999
- Optical Storage: Alan Marchant, "Optical Recording", Addison Wesley, 1999
- Communication between Computer Systems: Andrew S. Tanenbaum, "Computer Networks", Prentice Hall, 3rd edition 1996, ISBN 0133499456
- Larry L. Peterson, Bruce S. Davie, "Computer Networks, A Systems Approach", Morgan Kaufmann, 2nd ed. 1999

4 **Competencies**

By attending this course, students learn the architecture and the components of modern computer systems. This knowledge is directly required for advanced courses on distributed systems and communication systems. As computers are vital components of most robots and complex process automation systems, a basic understanding of computer systems is necessary for most practical work in this area, like project groups and lab courses.

5 **Examination Requirements**

All students are required to successfully complete 2 out of 4 special assignments in order to be admitted to the final exam. The final exam is a written test (3 hours). The grade is solely determined by the final exam.

6 **Formality of Examination**

☒ Module Finals ☐ Accumulated Grade

7 **Module Requirements (Prerequisites)**

8 **Allocation to Curriculum:**

Mandatory Course
Program: Automation & Robotics

9 **Responsibility/ Lecturer**

Prof. Dr. Selma Saidi/ Prof. Dr. Selma Saidi