Name of the course: Embedded and Real-Time Systems	Total credits: 2+2+1=5

IPM-18AUTERTSEG

Type: Obligatory

Total hours per semester:

lecture: 26

practice: 26

consultation: 13

other: projects in teamwork

Type of testing: exam

Semester: 2nd

Description

Nowadays the usage of a real-time system more and more frequently is needed. Today all of the modern operating systems contain real-time kernel. We shall overview the features of real-time systems, the scheduling types, RT signals and timers. We shall examine its modern appearance in an operating and in an embedded system.

Literature

Compulsory

- A.Tanenbaum, H. Boss: Modern operating systems, 4th. edition, ISBN-10: 0-13-359162-X
- Bill.O. Gallmeister: POSIX4: Programming for the Real World, O'Reilly & Ass. Inc. ISBN: 1-56592-074-0

Recommended

- SUSE® Linux Enterprise Real Time, User's Guide, http://www.novell.com
- M. Russinowich, et. all: Windows Internals. 7th. edition, ISBN-13: 978-0735684188
- Get Programming with the QNX® Neutrino® RTOS http://www.qnx.com

Competencies

Knowledge

- The student should have a complex and up-to-date knowledge in software technology, regarding the embedded and real-time systems(signals, high precision timers, messages, priorities,deadlines), and their implementation in standard (SLE RT) and embedded (QNX) systems.
- The student should have to know the real time features of the latest architectures.
- Detailed and expert-level knowledge of the technical terms and expressions of computer science in English.

Competencies

- Expertise in the application of the concepts and methods of software technology in modeling of complex software and architecture design. Ability to develop applications with real-time requirements.
- Ability to formalize complex technical problems, to analyze theoretical and practical background, and to provide adequate solutions.
- Expertise in design, development, operation and management tasks in the domain of complex software systems and database management systems.

- Skills for cooperation and team work, and ability to take leading role.
- Ability for written and oral communication in English, using the technical terms and expressions of computer science. Ability to argue, to prepare reports, to read, understand and exploit scientific and technical material (e.g. books and papers).
- Ability to perform supervised scientific research, and skills required for post-graduate studies.

Attitude

- Attends professional, technological development related to their qualification.
- Commitment to lifelong learning and receptivity to new IT competencies.
- Adopts and coordinates the ethical principles of work, organizational culture and research.
- Shares professional knowledge, mediates professional results.
- Open to initiate collaboration with IT and other specialists.

Autonomy and responsibility

- Takes responsibility for his professional decisions taken during his professional activities.
- Takes responsibility for observing and enforcing deadlines.
- Takes responsibility for own and fellow workers' work.
- In the case of operational critical IT systems, he/she can be assigned responsibility for development and operation, according to his/her professional competencies.