Course name: **Embedded Systems**

Number of hours: 45

Course duration: 1 semester

ECTS: 6

Course description: This course will cover the basics of embedded system organization, system on programmable-chip technologies andreal-time systems. It provides the advance knowledge required for embedded computer design and development aswell as real-time operating systems. Students are introduced to software development concepts applicable to real-time and embedded systems. Particularly ARM Cortex M3 will be studied as a representative embedded processorand embedded software development is carried out for ARM Cortex CPUs. The students will be able to grasp themain principles of embedded system design and understand the concept of hardware-software codesign, system onprogrammable chip (SoPC), real-time operating systems and scheduling techniques. Embedded system co-specification and partitioning is also introduced in the course.

Learning outcomes: Knowledge and understanding:

On completion of the course, students will be able to understand, analyze and explain the basic building blocks of embedded systems hardware, describe the hardware and software architecture of processors used in embedded systems, be able to perform measurements and trouble shootings in digital systems, be able to use embedded system development platforms and environments

Readiness and ability:

On completion of the course, students will be able to develop experience in assembler and C programming languages, be able to specify relevant embedded systems requirements such as memory, processor speed and energy consumption, build embedded system solutions with the help of common hardware interface units, develop documentation and presentation skills

Ability to make evaluations and assessments:

On completion of the course, students will be able to evaluate different

	embedded system architectures, evaluate the performance of different hardware units used in embedded systems, be able to identify relevant components and building blocks for embedded solutions, be able to identify energy effective and sustainable solutions
Literature:	Daniel W. Lewis, Fundamentals of Embedded Software with the ARM Cortex M3, 2nd Edition Pearson 2013,ISBN 978-0-13-291654- T. Martin, The Designer's Guide to the Cortex-M Processor Family: A Tutorial Approach, Elsevier, 2013, ISBN978-0080982960
Course type:	Lectures and laboratories
Assessment method:	Attendance, evaluation of small projects, exam
Prerequisites:	SystemC or other languages
Lecturer:	dr inż.Wojciech Zborowski