

Embedded Real-Time Systems

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Timetable: 21 hours of class lectures, plus 1.5 days of personal study. First Lecture on July 15, 2013, 14:30 (dates already fixed, see the calendar), Torre Archimede, room 2BC/30.

Course requirements: basics in operating systems and computer architectures, notions of concurrency and parallelism, simple fixed-point iterations and basic maths.

Examination and grading: students will be assigned a scientific publication from the state-of-the-art domain literature, to review and to defend, respectively attack, in a PC meeting style setting. After individual reading and small-group discussions, the students will convene in a public session, chaired by the instructor, and will debate over the contents, the pros, the cons, and the possible evolutions of the publication.

SSD: INF/01 - Computer Science

Aim: to provide the students with some initial yet articulate insight into the design principles and verification techniques of embedded real-time systems. Special attention will be paid to the challenges posed to the well-founded single-core processor theory and practice by the advent of multicore processors.

Course contents:

- a high-level view of an embedded system and its abstraction to a workload model
- concurrency models and implications on feasibility analysis: examples and exercises
- a glimpse to how the system works in practice
- the multicore challenge: what stands and what falls in the transition from concurrency to parallelism.

References: Real-Time Systems class in the Master-level Curriculum in Computer Science at the University of Padova, www.math.unipd.it/~tullio/RTS/2012/