

Real Time Systems

Instructor: Prof. Dimitris Maroulis

Semester: 3rd

Field: Information Technology in Medicine and Biology

Introduction and basic principles of real-time systems (definitions, requirements, properties, temporal identity, predictability-determinism, reliability). Techniques and tools for development, analysis, design. Dat
a flow diagrams (flow, events, transformations, terminators, control).
State transition diagrams (states, transitions, conditions, operations, event storing).
ER Diagrams (entities, relationships, objects, rules).
Accompanying documentation, general framework diagrams
, events list and behavioral patterns.
General requirements, controls.
Modeling-
architecture of
processors (specifications, evaluation, requirements assessment
, multithreading, hyperthreading, interfaces, control processes).
Real time operating systems.
Software modeling (architecture, processes, parallelism, security, evaluation).
Modern architecture and advanced methods for data collection in real-time biomedical systems.
Development of software to
support
real-time biomedical applications and analyze and optimize performance.
Network and internet real-time applications in telemedicine. Presentation of "real"
applications with emphasis on collecting, processing and analysing biomedical data in order to
assist medical diagnosis.