I Year II Semester
Code: 17ES201

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HARDWARE SOFTWARE CO-DESIGN

UNIT-I:
Co- Design Issues:
Co- Design Models, Architectures, Languages, A Generic Co-design Methodology.
Co- Synthesis Algorithms:
Hardware software synthesis algorithms: hardware – software partitioning distributed systemco-synthesis.

UNIT-II:
Prototyping and Emulation:
Prototyping and emulation techniques, prototyping and emulation environments, future developments in emulation and prototyping architecture specialization techniques, system communication infrastructure
Target Architectures:
Architecture Specialization techniques, System Communication infrastructure, Target Architecture and Application System classes, Architecture for control dominated systems (8051-Architectures for High performance control), Architecture for Data dominated systems (ADSP21060, TMS320C60), Mixed Systems.

UNIT-III: Compilation Techniques and Tools for Embedded Processor Architectures:
Modern embedded architectures, embedded software development needs, compilation technologies, practical consideration in a compiler development environment.

UNIT-IV:
Design Specification and Verification:
Design, co-design, the co-design computational model, concurrency coordinating concurrent computations, interfacing components, design verification, implementation verification, verification tools, interface verification.

UNIT-V:
Languages for System – Level Specification and Design-I:
   System-level specification, design representation for system level synthesis, system level specification languages.
Languages for System – Level Specification and Design-II:
Heterogeneous specifications and multi-language co-simulation, the cosyma system and lycos system.

TEXT BOOKS:
   1.   Hardware / Software Co- Design Principles and Practice – Jorgen Staunstrup, Wayne

Wolf – 2009,Springer.
2. Hardware / Software Co- Design -Giovanni De Micheli, Mariagiovanna Sami, 2002, Kluwer Academic Publishers.

REFERENCE BOOKS:

1. A Practical Introduction to Hardware/Software Co-design -Patrick R. Schaumont - 2010 – Springer Publications.