Course Name	Hardware-Software Codesign
Prerequisite course	Computer architecture
Corequisite course	-
References	1. P. Schaumont, "A Practical Introduction to Hardware/ Software Codesign," Springer, 2013. 2. J. Staunstrup, W. Wolf, "Hardware/Software Co-Design: Principles and Practice", Springer, 1997 3. M. Wolf, "Computers as Components: Principles of Embedded Computing System Design," Morgan Kaufmann, 4th edition, 2016. 4. J. Bhasker, "A SystemC Primer," SG publishers, 2002. 5. F. Vahid, T. Givargis, "Embedded System Design: A Unified Hardware/Software Introduction," John Wiley and sons, 2002.
Course instructor	Dr. Hoda Roodaki

Syllabus	1. Introduction and basic concepts
	  o Design of digital and embedded systems in various levels of abstraction
	  o Codesign versus traditional design approach
	2. Specification and model of computation
	  o State and activity-based models, concurrency
	  o Architecture and system-level languages
	  o SystemC as a system-level specification language
	3. System design and synthesis
	  o Co-synthesis algorithms
	  o Partitioning and design space exploration
	  o Multi-criteria optimization in partitioning
	  o Constrained single objective and bi-objective approaches in partitioning
	4. Co-synthesis in distributed systems
	  o Heuristic and exact methods
	5. Scheduling in co-synthesis
	  o Static and dynamic scheduling
	  o Unconstrained scheduling, list scheduling, force directed scheduling
	  o Exact model of scheduling based on ILP
	6. Performance analysis of the design and synthesis
	7. Hardware software interfaces
	8. Thermal and power-aware design