

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Embedded Systems (Branch Code - 54)

Year – I (Semester – I) (W.E.F. July 2013)

Subject: ARM Processor Architecture and System Design (715401)

Sr. No.	Course Content	Hours
1	ARM Architecture: The Acorn RISC machine, Architectural inheritance, ARM programmer's model, Control flow instructions, Conditional execution, 3-stage pipeline, ARM organization, 5-stage pipeline, ARM organization, Understanding of ARM instruction execution, Exceptions in ARM	8
2	ARM instruction set: Addressing modes, Data processing instructions, Data transfer instructions, ARM Condition codes, Branches, Software interrupt (SWI), Multiply instructions,	8
3	Programming: Writing simple assembly language programs for ARM, Thumb programmer's model and instruction set, ARM development tools	8
4	LPC2148: System Peripherals: Bus Structure, Memory Map, Register Programming, Memory Accelerator Module, FLASH Memory Programming, External Bus Interface, Booting process, Phase Locked Loop, Power Control, and LPC2000 Interrupt System.	14
5	User peripherals: General Purpose I/O, General Purpose Timers, PWM Modulator, Real Time Clock, Watchdog, UART, I2C Interface, SPI Interface, Analog To Digital Converter, Digital To Analog Converter, CAN Controller	14

Text Books:

1. ARM System on Chip Architecture, Second Edition, Author: Steve Furber, Pearson Education
2. Computer as Components: Principles of Embedded Computing System Design, Third Edition, Author: Wayne Wolf, Morgan Kaufmann Publication
3. ARM Assembly Language, Second Edition, Author: J R Gibson, Cengage Learning
4. The Insider's Guide To The Philips ARM7-Based Microcontrollers Author: Trevor Martin, Hitex Publisher

Reference Books:

1. Protocols for I²C Interface
2. Protocols for SPI Interface
3. Protocols for CAN Controller Interface