

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A)

ECE Department

Value added courses

20ECV02

Course Title: EMBEDDED NETWORKS

Instruction	30 L Hours per Week
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Embedded Networking: Introduction, Serial/Parallel Communication, Serial communication protocols, RS232 standard, RS485, Synchronous Serial Protocols, Serial Peripheral Interface (SPI), PC Parallel port programming, ISA/PCI Bus protocols, Firewire.

USB bus – Introduction, Speed Identification on the bus, USB States, USB bus communication Packets, Data flow types, Enumeration, Descriptors, PIC 18 Microcontroller USB Interface

Building a Network Hardware options, Cables, Connections and network speed, Design choices: Selecting components, Ethernet Controllers, Using the internet in local and internet communications, Inside the Internet protocol.

Exchanging messages using UDP and TCP, Serving web pages with Dynamic Data, Serving web pages that respond to user Input, Email for Embedded Systems – Using FTP, Keeping Devices and Network secure.

Network Topology, Localization, Time Synchronization, Energy efficient MAC protocols, SMAC, Energy efficient and robust routing, Data Centric routing.

TEXT BOOKS:

1. Embedded Systems Design: A Unified Hardware/Software Introduction - Frank Vahid, Tony Givargis, John & Wiley Publications, 2002
2. Parallel Port Complete: Programming, interfacing and using the PCs parallel printer port - Jan Axelson, Penram Publications, 1996.

REFERENCE BOOKS:

1. Advanced PIC microcontroller projects in C: from USB to RTOS with the PIC18F series - Dogan Ibrahim, Elsevier 2008.
2. Embedded Ethernet and Internet Complete - Jan Axelson, Penram publications, 2003.
3. Networking Wireless Sensors - Bhaskar Krishnamachari, Cambridge press 2005