RVS COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)
SULUR, COIMBATORE-641402

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS

M.Sc APPLIED ELECTRONICS

Syllabus effective for the students admitted during the academic Year 2008-2010 Batch

(2008-2010)

HOD **PRINCIPAL** **COE**

ABOUT THE DEPARTMENT

The Department of Electronics is established in the year 1990, has grown leaps and bounds over the years and now boats of an faculty team and a well equipped laboratory.

The Department is offering UG,PG and Research (M.Phil) programs. The department has constantly showing progress towards the benefit of students since inception in the year 1990, the dept has been producing university ranks regularly

The Department is continuously conducting academic programs for the benefits of the students. Association of Electronics is conducting National level seminars, Training Workshops, Orientation programs regularly. As a part of faculty improvement program, our staff members are regularly attending various seminars and workshops.

The Department is regularly organizing Intercollegiate and Interdepartmental competitions to explore the hidden talents of the students

The Department posses 3 well equipped state of the art laboratories for UG,PG and M.Phil students with advanced sophisticated equipments and latest software for VLSI and DSP subjects.

OBJECTIVES OF THE COURSE

- To introduce and equip students of I year with the latest developments n the field. Conducting remedial/Bridge courses for weak students of I year
- To provide practical skills in modern electronics field
- To provide intensive training for the final year students
- Overall career development enabling final year students to fit into the industry.

ELGIBILITY :

Candidates seeking admission to the first year course leading to the Degree of Master of Science (Applied Electronics) will be required to posses a pass in B.Sc in Electronics/Physics/Applied Physics/B.E.S/ B.Sc Electronics & Communication/ B.Sc Industrial Electronics/ Applied science with Electronics as subject of study for the two semesters.

DURATION OF THE COURSE

The course shall be offered on a full-time basis. The course will consists of four semesters of course work and laboratory work and fourth semester shall be project work (2 year duration)

SEM – I **M - I**

MICROWAVE ENGINEERING

OBJECTIVES:

- **To develop basic knowledge in Microwave equipments and Signals.**

PEDAGOGY :

- **All the units will be covered with blackboard teaching, LCD, OHP methods and Industrial visits.**

UNIT I INTRODUCTION TO MICROWAVE

Introduction – Maxwell's equation – Ampere's law – Faraday's law- Gauss Law – Wave equation – Wave guides – Rectangular wave guides - Propagation of waves in rectangular wave guides – TE and TM modes – Propagation of TE, TM waves in rectangular wave guide.

UNIT II MICROWAVE AMPLIFIERS AND OSCILLATORS

Klystrons - Two cavity klystrons- Multicavity klystrons-Reflex klystrons -Power output and frequency characteristics – Efficiency of Reflex klystron – Travelling wave tube (TWT) - Applications of TWT- Backward wave oscillator- Magnetron-Cavity Magnetron-sustained oscillation in Magnetron-Characteristics and applications of magnetron.

UNIT -III MICROWAVE ANTENNAS

Quantitative theory of short dipole antenna -characteristics of grounded quarter wave and ungrounded half wave antenna -radiation resistance and radiation pattern – Folded dipole and its application- Broadside and end fire array- Loop antenna-Direction finding by Adcock and Bellini tossi system – Helical Rhombic – Yagi Uda antenna – Horn antenna and parabolic reflectors.

UNIT IV PRINCIPLES OF RADAR

Introduction – Block diagram of RADAR – Application of RADAR- Range equation - Minimum detectable signal – receiver Noise - S/N ratio- Transmitter power – Maximum ambigious range- System losses. Receiver :Duplexer – Local oscillator –Mixer -Line pulse modulator – Displays - PPI.

UNIT V FM RADAR AND MTI

Doppler effect- CW radar – FM CW radar - Mutliple frequency CW radar – Moving Target Indicator(MTI) -Non coherent MTI- Pulsed Doppler Radar FM altimeter- Tracking –Sequential lobbing -Conical scan -Mono pulse tracking radar.

TEXT BOOKS :

1. N.Kulkarni, "MICROWAVE AND RADAR ENGINEERING" Umesh Publications, 2nd ED
2. Scholnik, "RADAR AND NAVIGATION" McGraw Hill International Ist Edition.(U-IV ,V).
3. K.D.Prasad, " ANTENNA AND PROPAGATION" Sathya Prakashan Publications, ISBN -81-7684-025-4

REFERENCE BOOKS :

1. Annapurna Das and Sisir K.Das "MICROWAVE ENGINEERING' TMH, First Reprint.
2. Samuel.Y.Liao "MICROWAVE DEVICES AND CIRCUITS" PHI, Third Indian Reprint.

SEM – I **M – II**

POWER ELECTRONICS

OBJECTIVES:

- **To develop adequate knowledge in Power Electronics and its Applications.**

PEDAGOGY :

- **All the units will be covered with blackboard teaching, LCD, OHP methods and Industrial visits.**

UNIT I THYRISTORS AND ITS APPLICATIONS

Theory and operation of SCR, UJT and TRAIC - Characteristics – design of relaxation oscillator using UJT - UJT in SCR and TRIAC triggering circuits – PUTs - Silicon bilateral switch-IGBT- speed control of DC shunt motor using thyristors – Single phase speed control system – Reversible control system.

UNIT II THYRISTOR COMMUTATION TECHNIQUES

Introduction – Natural commutation –Forced commutation- Self commutation – Impulse commutation resonance pulse commutation-External pulse commutation - Load side commutation – line side commutation – Complementary commutation. Controller rectifiers : Introduction -Principle of phase controlled converter-Single phase semi-converter- Single phase series converter.

UNIT III STATIC SWITCHES

Introduction- Single phase AC switches – Three phase AC switches- Three phase reversing switches-AC switches for bus transfer-DC switches – Solid state relays.

AC Voltage Controller : Introduction – Principle of ON/OFF control-Principle of phase control- Single phase bi-directional controllers with resistive loads and inductive loads – Cycle converters-Single phase cycle converters.

UNIT IV DC CHOPPERS

Introduction – Principle of step down operation – Step down with RL load – principle of step up operation – Switch mode regulator- Buck regulator – Boost regulator- Buck and Boost regulator –CUK regulators.

UNIT V INVERTERS AND POWER SUPPLIES

Introduction – Principles of operation – Single phase bridge inverters-Three phase inverters-Voltage control of single phase inverters – Introduction to power supply AC and DC power supply-Switched mode DC power supplies – Resonant DC power supplies – Bi-directional power supplies-AC power supplies.

TEXT BOOK :

1. M.H.Rashid- “POWER ELECTRONICS:CIRCUITS DEVICES AND APPLICATION” – PHI, ISBN-81-203-0869-7 (Unit I,II,III,IV&V).

REFERENCE BOOK:

1. SEN - “POWER ELECTRONICS”-TMH Pub, ISBN-0-07-462400-8.

SEM – I **M - III**

8051 MICRO CONTROLLER WITH C PROGRAMMING

OBJECTIVES:

- **To develop basic knowledge in 8051 CPU and develop the programming skills in 8051 ALP**

PEDAGOGY :

- **All the units will be covered with blackboard teaching, LCD, OHP methods and Industrial visits.**

UNIT –I OVERVIEW AND INSTRUCTION SET:

Micro controllers and embedded processors- Micro controllers for embedded systems-overview of 8051 family-8051 instruction set and registers –

UNIT – II ASSEMBLY PROGRAMMING ADDRESSING MODES:

8051 assembly programming- program counter-ROM-data types-directives-flag bit-PSW registers-register bank-stack-loop and jump instructions-I/O port programming-addressing modes

UNIT – III ARITHMETIC AND LOGICAL OPERATIONS IN ALP AND C

Arithmetic instructions and programs-unsigned addition-subtraction unsigned multiplication and division- logic instruction and programs – single bit instructions and programming.

PROGRAMMING WITH C :

Data types – time delay programming- I/O programming – logic operations- arithmetic operations.

UNIT – IV 8051 INTERRUPTS AND PERIPHERALS:

Basic register of timer - programming of 8051 timer - counter programming -8051 serial communication – 8051 connection to RS232 – 8051 serial communication programming- programming timer interrupts – 8051 interrupts –programming external hardware interrupts –programming with serial communication interrupts – peripheral and interrupt programming in C.

UNIT – V: REAL WORLD APPLICATIONS:

LCD interfacing – keyboard interfacing – parallel and serial ADC interfacing –DAC interfacing –sensor interfacing and signal conditioning – RTC interfacing – relays and Opto-isolator interfacing – stepper motor interfacing – DC motor interfacing and PWM interfacing.

Text Book:

1. "THE 8051MICROCONTROLLER AND EMBEDDED SYSTEMS USING ASSEMBLY AND C "– Muhammad Ali Mazidi, Janice Gillispie Mazidi And Rollin .D.Mckinlay ,PHI -2 ND EDITION 2006

SEM – I **M - IV**

WIRELESS COMMUNICATION SYSTEMS

UNIT I COMMUNICATION NETWORKS AND PROTOCOLS

Asynchronous Transfer mode - ATM logic connections - ATM cells - ATM service categories - protocols and TCP / IP suite - Need for a protocol Architecture - TCP / IP protocol Architecture - OSI model - protocol layers - standardization within the OSI frame work - Internet Internet Protocol Transmission Control Protocol - FTP.

UNIT II WIRELESS COMMUNICATION TECHNOLOGY

Spread Spectrum - Concept of a Spread Spectrum - Frequency Hopping Spread Spectrum - Direct Sequence Spread Spectrum - CDMA - Generation of spread sequences - coding and Error Control - Error Dedection - Block error Correction codes - Automatic repeat Request.

UNIT III WIRELESS NETWORKING

Satellite communication: Satellite parameters and configuration - Satellite orbits - frequency Bands - Attitude and Station Keeping - Transmission Impairment - Satellite network Configuration - Capacity Allocation.

UNIT IV MOBILE COMMUNICATION

Principles of cellular Network organization - Frequency Resuse - operation of Cellular system - Mobile radio propagation effects - base station antennas and mobile Antennas - Types of mobile systems - Access methods: TDMA, FDMA.

UNIT V WIRELESS LANS

Overview - Infrared LAN - Spread Spectrum LAN - Narrow Band Microwave LANs - Wireless LAN Standards - IEEE 802 Protocol Architecture - Services - Bluetooth Radio Specifications and Baseband Specifications.

TEXTBOOKS:

1. William Stallings. "WIRELESS COMMUNICATION AND NETWORKS" Pearson education, Singapore, ISBN - 81 -7808 -560(Unit III & IV)
2. Singh,Singh, "INTERNET CONCEPTS, PROBLEMS AND SOLUTIONS"(UNIT I & V)
3. Dr.Kamilo Feher,"WIRELESS DIGITAL COMMUNICATION",Prentice Hall of India, 2000(UNIT II)

SEM – I **EL - I**

WEB TECHNOLOGIES

UNIT – I

Internet working concepts – Devices: Repeaters – Bridges – Routers – Gateways – Internet Topology Internal Architecture of an ISP – IP Address – Basics of TCP – Features of YCP – UDP.

UNIT – II

DNS – Email – FTP – HTTP – TELNET – Electronic Commerce and web technology- Aspects – types – E – Procurement models – solutions – Supply chain management – Customer Relation ship management Features required for enabling E – Commerce – tiers – Concept of tier.

UNIT III

Web page – static Web pages – Dynamic web pages – DHTML – CGI – Basics of ASP Technology – Active web pages – user sessions – Sessions and session management – maintaining State Information – Transaction management Transaction Processing Monitors – Object Request Brokers – Component Transaction – Monitor – Enterprise JAVA beans.

UNIT IV

Security issues: Basic Concepts – Cryptography – Digital Signature – Digital Certificates – Security Socket Layer (SSL) – Credit Card Processing models – Secure Electronic Transaction – 3D Secure Protoc ol – Electronic Money – Electronic Data Interchange: Overview of EDI – Data exchange Standards – EDI Architecture.

UNIT – V

Extensible Mark Up Language (XML) – Basics of XML – XML parsers – Need for a standard – Limitations of Mobile Devices – WAP Architecture – Wap Stack – Object technology.

TEXT BOOK

1. **Achyat S. Godbole and Atul Kahte," Web Technologies", TMH,Delhi,2006.**

REFERENCES:

1. **Ellote Rusty Harold, "Java Networking Programming",O'Reilly Publications,1997**
2. **Jason Hunter, William Crawford, "Java Servelet Programming", O'Reilly publications,1998.**

SEM – II **M – V**

FIBER OPTICS AND THEIR APPLICATIONS

OBJECTIVES:

- **To develop the basic knowledge in Fiber optic Communication systems.**

PEDAGOGY :

- **All the units will be covered with blackboard teaching, LCD, OHP methods and Industrial visits.**

UNIT I OPTICAL FIBERS, STRUCTURES AND WAVEGUIDES FUNDAMENTALS

Optical fiber modes and configuration – Fiber types :step index fiber structure – ray optic representation – Wave representation –Mode theory of circular wave guides - Maxwell's equation – Wave guide equations – Wave equation for step-index fibers - Model equation – Modes in step index fibers- Power flow in step index fiber – Graded index fiber structure – Graded index numerical Aperture.

UNIT II SIGNAL DEGRADATION IN OPTICAL FIBERS

Overview Attenuation – Attenuation unit- Absorption- Scattering loss-Bending losses-Core and Cladding loss-Signal distortion in optical wave guides – Information capacity determination – Group delay – Material dispersion-pulse broadening in graded index wave guides - Mode coupling.

UNIT III POWER LAUNCHING AND COUPLING

Source of fiber power launching- Source output pattern- Power coupling calculations –Power launching versus wavelength –Equilibrium numerical aperture-Lensing schemes for coupling improvement Non-imaging microsphere-Laser diode to fiber coupling – fiber to fiber joints –Mechanical misalignment –Fiber splicing losses –Fiber end face preparation –Splicing techniques –optical fiber connectors.

UNIT IV APPLICATIONS AND FUTURE DEVELOPMENTS

Introduction- Public network application: Trunk network, Junction Network, Local access networks-Submerged systems-Synchronous network-Military, Civil , Consumer and Industrial applications.

UNIT V ADVANCED SYSTEMS AND TECHNIQUES

Wavelength division multiplexing –LAN: Optical fiber bus-Ring topology –Star architecture-Fail safe fiber optic nodes. OPTICAL AMP: Basic applications-Optical amp types-gain-Amp noise figure-optical bandwidth –Photonic switching –Mechanical switches– Integrated optical switch.

TEXT BOOKS:

1. Gerd Keiser, " OPTICAL FIBER COMMUNICATION", TMH,3rd Edition,ISBN-0-07-100785-7(Unit I,II,III and V).
2. John M.Senior, " OPTICAL FIBER COMMUNICATION PRINCIPLE AND PRACTICE " PHI 2nd Edition ISBN-81-203-0882-4(Unit IV).

REFERENCE BOOKS:

1. Henry Zanger and Cynthia Zanger " FIBER OPTIC COMMUNICATION AND OTHER APPLICATION" Maxwell international Edition.
2. N.Sharma, "FIBER OPTICS IN TELECOMMUNICATIONS", TataMcGraw Hill.
3. K.Kao Charles "OPTICAL FIBER SYSTEMS: TECHNOLOGY, DESIGN AND APPLICATIONS", TMH

SEM – II **M - VI**

CONTROL SYSTEMS

UNIT I

Generalized configuration and functional description of measuring instruments:- functional elements of an instrument - Input and output configuration of measuring instruments. Zero, first and second order system for step and ramp inputs - system stability - Routh Hurwitz criteria - simple problems.

UNIT II

Mathematical models of physical systems; introduction differential equations of physical systems - transfer functions - block diagram Algebra - signal flow graph - Mason Gain Formula - Simple problems.

UNIT III

BASIC CONTROL ACTIONS AND RESPONSE OF CONTROL SYSTEMS

Introduction - Basic control Actions - Classification of Industrial controllers - Self operated controllers - two position or on - off control action - P, PI, PD and PID control actions - Effects of integral and derivative control Actions on system performance.

FEEDBACK CONTROL SYSTEM CHARACTERISTICS

Transformatics of feedback systems - overall system gain control - Example of an Electronic Amplifier - Sensitivity of control system to parameter variations - Control of system transient response - Control of disturbance signal in feed back control systems.

UNIT - IV

State space Analysis of Control System: Introduction - State Space representation of systems - Solving the time invariant state equation - Transfer Matrix - Linear time Varying Sysytems.

UNIT V

Optional and Adaptive Control Systems: Introduction - Controllability - Observability - Time operational Control Systems - Model reference control system - Adaptive Control System.

TEXT BOOKS:

1. MODERN CONTOL ENGINEERING - PHI 1970- III EDITION- Katsuhiko Ogata.(Unit I, IV, and V)
2. CONTROL SYSTEM ENGINEERING I.J NAGRATH & M.GOPAL III EDITION - New Age International (Unit II)
3. Measurement Systems Application andDesign - Ernest O Doebelin IV Edition - McGraw Hill Publications. (Unit - I)
4. Automatic Control System- Khanna Publishers - S.N.Verma (Unit III)
5. Automatic Control System- BenjaminKuo (Unit III)

SEM – II **M - VII**

EMBEDDED PIC MICROCONTROLLER

OBJECTIVES:

- **To develop basic knowledge in PIC16F87X CPU and develop the programming skills in PIC16F87X ALP**

PEDAGOGY :

- **All the units will be covered with blackboard teaching, LCD, OHP methods and Industrial visits.**

UNIT I ARCHITECTURE OF PIC MICROCONTROLLER:

Architecture – the CPU – ALU – status register – hardware configuration – interrupts – program counter and stack –memory organization – system clock– oscillators – hardware and file registers –I/O ports

UNIT II INSTRUCTION SET:

Addressing modes – instruction set – data moment instructions –data processing instructions – execution change operators – processor control – instructions– bank addressing – register organaisation

UNIT III PERIPHARALS IN PIC CONTROLLERS:

Timer 0 module - Timer 1 module - Timer 2 module – watch dog timer – power up timer – SLEEP - Start-up timer – Capture/ Compare/ PWM module

UNIT IV PERIPHARALS IN PIC CONTROLLERS:

Synchronous serial port modules – USART – SPI – I2C transmission and reception – ICSP **special features of the CPU** : oscillator selection – Reset – power on reset – brownout reset –ADC

UNIT V INTERFACING AND APPLICATIONS:

Digital logic – relays and solenoids - LCD interfacing –I2C interfacing - DAC interfacing – stepper motor interfacing – DC motor interfacing -ADC application -PWM applications –

TEXT BOOKS :

1. "Programming and customizing PIC micro micro controllers" by myke predrco II- nd edition – MCGRAW HILL - ISBN -0-07-136172-3

2. PIC16F87X DATA BOOK ,Microchip technology

SEM – II **M –VIII**

SIGNALS & SYSTEMS

OBJECTIVES:

- **To develop the basic knowledge in various signals and its applications in Electrical and Electronics systems.**

PEDAGOGY :

- **All the units will be covered with blackboard teaching , LCD,OHP methods and Industrial visits.**

UNIT I INTRODUCTION TO SIGNALS AND SYSTEMS

Signals – transformation of the Independent variables – Basic continuous time signals- basic discrete time signals –Systems : Properties of systems.

Linear time invariant systems: The representation of signals in terms of impulses – discrete time LTI systems: the convolution sum - continuous time LTI systems : -Properties – singularity functions.

UNIT II FREQUENCY ANAL YSIS OF SIGNALS AND SYSTEMS

Frequency Analysis of continuous time signals – Fourier series for CT signals-Power density spectrum of periodic signals. Fourier transform for Continuous Time Aperiodic signals-energy density Spectrum of Aperiodic signals. Frequency analysis of Discrete Time Periodic Signals -Power density spectrum of periodic signals – Fourier Transform of Discrete Time Aperiodic signals –Convergence of Fourier Transform – Energy density Spectrum of Aperiodic signals – Properties of Fourier Transform for Discrete Time signals.

UNIT III DFT - PROPERTIES AND APPLICATIONS

Frequency domain sampling: Properties of the DFT-FFT Algorithms-Direct Computation of the DFT – Divide and Conquer approach to Computation of the DFT – Radix – 2 FFT Algorithms – Radix -4 FFT algorithms – Applications of FFT Algorithms.

UNIT IV Z TRANSFORM AND ITS APPLICATIONS

Z Transform : Direct Z transform – Inverse Z transform – Properties of Z transform – Rational Z transform: Poles and zeros – pole location and Time Domain behavior for Casual signals –system

UNIT V FIR AND IIR

Magnitude and Phase sequence of Digital filter – Frequency response of Linear phase FIR filter – Design techniques for FIR filters – design of Optimal phase FIR filter.

IIR Filter design by approximation of derivatives – IIR Filter design by impulse invariant method and the Bilinear transformation – Butterworth and Chebyshew Filter

TEXT BOOKS :

1. Alan V.Oppenheim, Alan S.Willsky lanT.Young, " SIGNALS AND SYSTEMS", IInd Edition PHI Pvt Ltd, ISBN_0-87692-503-4 (Unit I).
2. John G.Proakis,Dimitris G.Manolakis, "DIGITAL SIGNAL PROCESSINGPRINCIPLES,ALGORITHMS AND APPLICATIONS", IIIrd Edition,PHI Pvt Ltd ISBN 81-20-3-1129-9.(Unit II, III & IV).
3. S.Salivahanan, A.Vallavaraj, C.Gnanapriya "DIGITAL SIGANL PROCESSING" 6th Reprint TMH ISBN-0-7-07-463996-X (Unit V).

SEM – II **EL-II**

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

UNIT I INTRODUCTION

Purpose of Data Base Systems – View of Data – Data models Data Base Languages – Transaction Management – Storage Management Database Administrator - Data Base Users – System Structure.

ENTITY Relationship Model: Basic concepts – keys – Entity Relation ship Diagram, Weak Entity sets, E-R Features. Specialization, Generalization.

RELATIONAL MODEL: Structure of Relational Databases – Relational Algebra – Views.

UNIT II SQL: BACKGROUND:

Basic structures – set operations – Aggregate Functions – Null Values – Nested sub Queries – Derived Relations – Views – Modification of the Data base – joined Relations – Data Definition Language – Embedded SQL Features.

UNIT III INTEGRITY CONSTRAINTS:

Domain Constraints: Domain Constraints – Referential Integrity – Assertions – Triggers – Functional Dependencies. RELATIONAL DATABASE DESIGN: pitfalls- Normalization.

OBJECT ORIENTED DATABASES: New Data Base applications – object oriented Data model – object oriented Languages – Persistent programming Languages.

UNIT IV OBJECT RELATIONAL DATA BASES

Nested Relations – Complex types and object orientation – Querying with complex Data Types – Creation of complex values and objects – comparison of objects Oriented Relational Data bases.

UNIT V APPLICATIONS

Decision support systems – Data Analysis – Data Mining – Data warehousing – spatial and Geographic Databases – Multimedia Databases – Mobility and personal Databases – Information – Retrieval systems – Distributed Information Systems – The world Wide Web.

TEXT BOOK

Abraham silberschatz,Henry F.Korth,s.sudharson,''Database concepts'', Tata McGraw Hill International Editions – 1997

REFERENCE BOOK

1. **Alexis Leon and Mathews Leon," Database Management systems" Vikas pub**
2. **Elmasri Navathw, " Fundamentals of Database Systems", Pearson Education pub, 3rd Edition 2001**

SEM – I & II **MP - I**

POWER ELECTRONICS AND COMMUNICATION LAB

OBJECTIVES:

- **To develop the Designing knowledge of students in Industrial Electronics and Communication circuits.**

PEDAGOGY :

- **All the practical will be covered with blackboard explanation and laboratory demonstration.**

LIST OF EXPERIMENTS

1. Forced Commutation Techniques.
2. Buck and Boost Regulators.
3. Timing circuits using thyristors.
4. Voltage regulators using IC LM 723.
5. Thyristor chopper.
6. Speed Control of DC Motors.
7. Solid state Relay.
8. Thyristor triggering circuits.
9. Single phase Inverter.
10. Sequential timer.
11. AM Generation and Detection.
12. PAM, PPM and PWM generation.
13. FM Generation and Detection.
14. Audio Amplifier using IC LM 380.
15. FSK Generator.

SEM – I & II **MP - II**

SYSTEM DESIGNING WITH 8051 AND PIC 16F877 CPU

OBJECTIVES:

- **To develop the Programming knowledge of students in Microprocessors 8051 & PIC 16F877CPU**

8051 CPU LAB [ANY 10 EXPENIMENTS]

1. Arithmetic and logical operation programs.
2. Parallel port interface using IC 8255.
3. A/D Converter.
4. D/A Converter.
5. Matrix key pad and seven Segment display interface.
6. Up/Down Counter and object counter.
7. Stepper Motor Interface.
8. Traffic light Controller.
9. Speed control of DC Motor.
10. Temperature monitoring and control.
11. Water level controller.
12. Digital Clock.
13. Frequency Measurement.

PIC16F877 CPU LAB [ANY 10 EXPENIMENTS]

1. Arithmetic and logical program.
2. Delay generation using timer0 and timer1.
3. Periodic delay generation using timer2.
4. Data transfer with the parallel port.
5. A/D Converter.
6. PWM generation.
7. Serial data communication.
8. Object counter.
9. Digital clock.
10. Temperature measurement and control.
11. Compare and capture operation program.
12. Electronics weighing scale.
13. Water level controller.
14. Stepper motor controller.
15. D/A converter.

CONTROL SYSTEMS LAB

1. FREQUENCY RESPONSE OF FIRST RDER LOW PASS FILTER
2. FREQUENCY RESPONSE OF PEAKING AMPLIFIER
3. QUENCH OIL TEMPERATURE CONTROL
4. STRIP TENSION CONTROLLER
5. SIGNAL CONDITIONING CIRCUIT USING LVDT
6. PLL CONTR OLL SYSTEM
7. SECOND ORDER BUTTERWORTH FILTER
8. DIGITAL LIGHT INTENSITY CONTROLLER
9. RELATIVE HUMIDITY CONTROLLER
10. STEPPER MOTOR MOTION CONTROL

SEM – III **M – IX**

ARM PROCESSOR AND RTOS

OBJECTIVES:

- **To develop the Designing and programming knowledge in ARM processor and RTOS**

UNIT I ARM7TDMI ARCHITECTURE:

Pins and functions- block and core diagram – thumb concept – advantages – signal description – programmer's model – memory formats – operating modes

UNIT II INSTRUCTION SET :

Instruction length – the ARM state register set – the THUMB state register set – relationship – program status register – exceptions – FIQ – IRQ – ABORT – ARM instruction set – condition field – THUMB instruction set

UNIT III ARM INTERFACING :

Memory interface – cycle types – co-processor interface – debug interface – scan chains and JTAG interface – ICE breaker module–inter working ARM & THUMB

UNIT IV EMBEDDED / REAL TIME OS CONCEPTS:

Architecture of the kernels – task and task scheduler – interrupt service routine – thread communications – creations – inter thread communications– thread management.

UNIT V APPLICATIONS OF RTOS:

Time slicing – round robin method – semaphores – semaphore management –mail boxes – message queue – pipes – memory managements safe and un safe regions

REFERENCE SITES:

WWW.WINDRIVER.COM

WWW.ARM.COM

REFERENCE BOOKS:

"Embedded / real time systems: black book "– Dr.K.V.K.K.prasad – green tech press 2005 edition

SEM – III **M – X**

VLSI FABRICATION AND VHDL

OBJECTIVES:

- **To develop the Designing and programming knowledge in VLSI technology and VHDL.**

UNIT I VLSI FABRICATION TECHNIQUES : An overview of wafer fabrication – Wafer processing – Oxidation – Patterning –Diffusion-Ion implantation –Deposition-Si gate n MOS process – CMOS Process- n well – p well –p well Twin tub– Si on insulator – CMOS process Enhancement- Interconnect circuit elements.

UNIT II INTRODUCTION TO VHDL : Overview of VHDL – Capabilities – hardware Device – Basic terminology –Entity declaration .**ARCHITECTURE BODY :** Structure style of modeling – Data flow – Style of modeling – Behavioral style of modeling-Mixed style of modeling –Configuration declaration – Package declaration- Package body – Model analysis –Simulation.

UNIT III BASIC LANGUAGE ELEMENTS : Introduction – Identifiers – Data objects.

DATA TYPES : Scalar types –Composite types – Access types-Incomplete types - File types.

OPEARATORS : Logical operator – relational operator – shift operators – Adding operators – Multiplying operators – Miscellaneous operators.

UNIT IV BEVIORIAL MODELING : Entity declaration – Architecture body – Process statement- Variable assignment statement –Signal assignment statement – wait statement- IF statement – Case statement – Null statement – Loop Statement – Exit statement – Next statement – Assertion statement – Report statement – More on signal assignment statement- other sequential statement- multiple processes- Postponed processes.

DATA FLOW MODELING : Concurrent signal assignment statement –Concurrent versus sequential signal assignment – Delta Delay revisited – Multiple drivers- Conditional signal assignment statement – Selected signal assignment – Unaffected value- Block statement – Concurrent assertion statement-Value of a signal.

STRUCTURAL MODELING : An example- Component declaration – Component instantiation – other examples – Resolving signal values.

UNIT V DESIGN OF FPGA'S AND CPLD

Finite state machine start – Programmable logic arrays – Programmable array logic devices- Altera Max 7000CPLD'S –Xilinx – XC 4000 structures – Xilinx interconnection –Xilinx logic – Xilinx 3000 series FPGA's – Altera Complex Programmable Logic Devices– Altera Flex 10k series CPLD's.

TEXT BOOKS:

1. Neil H.E.Weste, Kamram Eshaghian , "PRINCIPLES OF CMOS VLSI DESIGN", (Unit I).
2. J.Bhasker, "VHDL Primer", Low price Edition,2001 (Unit II,III& IV).
3. Charles H.Roth Jr. "DIGITAL SYSTEM DESIGN WITH VHDL" Brooks/Cole Thomson Learning PWS Publishing, ISBN-981-240-052-4 (Unit V).

REFERENCE BOOKS

1. Morris Mano and Charles R.Kime , "LOGIC CIRCUIT LAY-OUT AND DESIGN", IInd Edition Updated, Pearson education Asia,2002.
2. Douglas A Pucknel and Kamram Eshaghian, "BASIC VLSI DESIGN" Third Edition, PHI.

SEM – III **M – XI**

DIGITAL SIGNAL PROCESSOR

UNIT I Introduction to P-DSP s:

Multiplier and Multiplier Accumulator (MAC)- Modified bus structure and memory access schemes in P-DSPs - Multiple access Memory – Multi ported Memory - VLIW architecture - pipelining – special addressing modes in P -DSPs.-On chip peripheral.

UNIT II Architecture of TMS 320C5x

Introduction – Bus Structure – Central Arithmetic Logic Unit (CALU) – Index Register – Auxiliary Register ALU (ARAU) - Auxiliary Register Compare Register (ARCR) - Block Move Address Register (BMAR)- Block Repeat Registers (RPTC,BRCR,PASR,PAER) – Parallel Logic Unit (PLU)-Memory-Mapped Registers – Program Controller – Some Flags in the Status Registers – On-Chip Memory – On-Chip Peripherals

UNIT III TMS320C5x Assembly Language Instructions

Assembly Language Syntax – Addressing Modes – Load/Store Instructions-Addition/Subtraction Instructions-Move Instructions-Multiplication Instructions – The NORM Instruction

UNIT IV Architecture and Addressing Modes of 'C3x

Architecture of TMS 320C3x:

Introduction – An Overview of TMS320C3x Devices- Internal Architecture – Central Processing Unit –CPU Registers – Memory organization - Cache Memory – Peripherals. Data Formats – Addressing Modes – Groups of Addressing Modes.

UNIT V Applications of DSP

Introduction – voice processing – applications of radar – applications of image processing.

TEXT BOOKS:

1. S.Salivahnanan, A.Vallavuraj and C.Gnanapriya , " DIGITAL SIGNAL PROCESSING", TataMcGraw Hill publishing Company Ltd, ISBN-0-07-463996-X (UNIT V).

2. B.Venkatramani and M.Bhaskar "DIGITAL SIGNAL PROCESSOR ARCHITECTURE, PROGRAMMING AND APPLICATION ", TataMcgraw Hill Publishing Company ISBN – 0-07-U-47334-X (UNIT I to IV).

SEM III **EL -III**

PROGRAMMING WITH .NET

UNIT I

VB.NET: Introduction- programming steps – Running VB.NET applications – Working with tool box controls: Data Time picker Control – Input Control – Link Label Control – Menus and Dialog boxes: Main Menu Control – Menu Controls – VB.NET variables and operators.

UNIT II

Decision Structures: Conditional Expressions – if…then and select case Decision structures – Loops and Timers: for…next and do loops –Timer Control – Debugging VB.NET programs- Using modules and procedures: Standard Modules, Public Variables – Function Procedures and Sub Procedures – Adding Graphics and Animation Effects.

UNIT III

ASP.NET: Introduction - .NET Frame work – ASP – operating Systems – Servers – ASP objects – AD0 and AD0.NET objects – ASP components – RDBMS and other Data sources – Developing distributed online applications – Client / Server or Tiered Applications – Built in ASP.NET objects and Interconnectivity – the ASP Server object.

UNIT IV

Web forms and ASP.NET: programming webforms – web forms capabilities – web forms processing – Web forms and Events – Creating web forms – Event Handlers – Building Interactive applications with VS.NET – Solutions and project in VS.NET – Solution Explorer – Creating a Web form.

UNIT V

ASP.NET configuration, scope and state – ASP application – ASP.NET applications –ASP.NET and State – The application object – ASP Sessions – The Session Object.ASP.NET objects and components: The Scripting object model – Active Server Components and controls – More active Server Components.

TEXTBOOK:

1. **Michael Halvorson,"Microsoft Visual Basic.NET step by step", PHI Ltd,2003.**
2. **Dave Mercer,"ASP.NET: A Beginner's Guide", TMH publishing Company Ltd, Edition 2002.**

REFENCE BOOK:

1. AJ Williams, Kim Barber," ASP Solutions", cream Tech Press, 2000 .

SEM III **MP -III**

VLSI AND VHDL LAB

OBJECTIVES:

- **To develop the Designing & Programming skill in VLSI circuits.**

PEDAGOGY :

- **All the practical will be covered with blackboard explanation and laboratory demonstration.**

LIST OF EXPERIMENTS

1. Realizing AND, OR gates.
2. Designing of Half adder and Full adder.
3. Designing of half subtractor and full subtractor.
4. Designing of RS,JK & D flip flops.
5. Modeling an encoder.
6. Designing a decoder.
7. Modeling a 4X1 multiplexer.
8. Modeling a 4X1 de multiplexer.
9. Arithmetic operation Addition, subtraction.
10. Modeling an UP/DOWN counter.
11. Designing a 8 bit shifter.
12. Designing a decade counter.
13. Modeling a parity generator.
14. Designing a binary counter.
15. Designing a 3-bit ALU.

SEM III **MP -IV**

DSP LAB

LIST OF EXPERIMENTS

1. Study of basic programs a) 16 bit Addition and 32 bit addition b) Multiplication.
2. Study of special instructions.
3. Study of I/O peripherals a. ADC Initialization b. DAC Initialization.
4. Waveform generation a. Sine b. Square c. Triangle d. Saw tooth.
5. Sampling.
6. Convolution of two discrete signals.
7. Correlation of two discrete signals.
8. 4 point DFT.
9. 4 point FFT.
10. FIR filters.

SEM-III **EL - IV**

PROGRAMMING WITH . NET AND RDBMS LAB

ANY 10 EXPERIMENTS

1. Write a program to check whether the given number is Armstrong number or not
2. Write a program to find the greatest number in text box.If the give is same,show an error message and clear the corresponding text boxes.
3. Write a program to check whether the given number in mirrir no. or not.
4. Write a program to check whether the given number is prime or not.
5. Write a program to find the sum of digits of a given number.
6. Write a program to create a frame with two buttons called father and mother,when the click the father button the name of the father,his age and designation must appear. when click mother similar details of mother appear .
7. Write a program to check whether to given numbers is adam number or not.
8. Creating Tables and writing simple Queries using
   a)Comparision Operators
   b)Logical Operators
   c)Set Operators
   d)Sorting and Grouping
9. Creaton of Reports using Column format
10. Writing Queries using built in functions
11. Updation and Altering tables using SQL.
12. Creation of Students Information tables and write PL/SQL Block find the Total,Average marks and Results
13. Write aPL/SQL block to prepare the Electricity Bill.
14. Splitting the table:Write a PL/SQL block to split the students information table into two,one with the passed and other failed.

SEM-III **EDC - EL - V**

MOBILE COMMUNICATIONS

UNIT I CELLULAR WIRELESS NETWORKS

Principles – First Generation Analog - Second generation TDMA – Second generation CDMA – Third generation systems. Satellite systems: Basics – GEO-LEO-MEO –Routing – Localization – Handover.

UNIT II WIRELESS TRANSMISSION

Frequencies for radio transmission – signals –propagation –multiplexing – modulation – spread spectrum – medium access control – TDMA-CDMA-Comparison of S/T/F/CDMA.

UNIT III GSM SERVICES

System architecture – radio interface – protocols –localization and calling – Handover –Security – New Data Services: GPRS System architecture of DECT, TETRA, UMTS.

UNIT IV BROADCAST SYSTEMS

Overview of broadcast system – cyclical repetition of data – Digital audio broadcasting – Convergence.

WIRELESS LAN:IEEE 802.11- system architecture – protocol architecture – MAC management .

UNIT V MOBILE NETWORK LAYER

Mobile IP: Entities and terminology – IP Packet delivery – Agent discovery – Registration – tunneling and encapsulation– IP micro mobility support.

TEXT BOOKS:

1. Jochen Schiller, “MOBILE COMMUNICATIONS”, Pearson Education Asia, Second Edition,2004.(Unit I,II,V).
2. William Stallings, “WIRELESS COMMUNICATIONS AND NETWORKS”, Pearson Education.(Unit III,IV).

REFERENCE BOOKS:

1.Joachim Tisal , “GSM RADIO TELEPHONY”, John Wisley.
2.William C.Y.Lee, “MOBILE CELLULAR TELECOMMUNICATIONS”, McGraw Hill, International Edition.
3.William C.Y.Lee, “MOBILE COMMUNICATION ENGINEERING “, McGraw Hill International Edition.
4.Rajan Kurupillai& Others , “WIRELESS PCS”, McGraw Hill International Edition.
5.Johan Powers, “FIBER OPTICS SYSTEMS” ,McGraw Hill International Edition.