DHARMSINH DESAI UNIVERSITY, NADIAD
B.E./B.Tech SEMESTER – I (IT)

AF111 MATHEMATICS-I

SYLLABUS & SCHEME
w.e.f. July 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	--	4	0	**4**

[A]   DIFFERENTIAL CALCULUS:
Equation of tangent & normal, angle between two curves, sub tangent, subnormal, length of tangent &
length of normal, pedal equation, maximum & minimum of one variable, radius of curvature of plane curves in Cartesian, polar and parametric equations, radius of curvature at origin by Newton's method.

[B]   SUCCESSIVE DIFFERENTATION :
nth derivatives, Leibnitz's theorem, Maclaurin's theorem, Taylor's theorem, Applications to obtain expansion of functions, Indeterminate forms.

[C]   INTEGRAL CALCULUS:
Curve Tracing, applications for finding area, length of arc, volume and surface area of solids of revolutions, centre of gravity.

[D]   REDUCTION FORMULA

$$\int_0^{\frac{\pi}{2}} \sin^n x \, dx, \quad \int_0^{\frac{\pi}{2}} \cos^n x \, dx, \quad \int_0^{\frac{\pi}{2}} \sin^m x \cos^n x \, dx$$

$$\int_0^{\frac{\pi}{4}} \tan^n x \, dx, \quad \int_0^{\frac{\pi}{4}} \cot^n x \, dx, \quad \ldots\ldots$$

[E]   BETA AND GAMMA FUNCTION:
Definition, properties, relation between Beta and Gamma   functions, use in evaluation of definite integrals, Error and Elliptic functions.

[F]   ORDINARY DIFFERENTIAL EQUATIONS:

Formulation of differential equations, general and particular solution, equation of first order and first degree of the type : variables, separable, homogeneous, non-homogeneous, linear equations, exact equation and reducible to these forms, clairant's form, Application to geometrical and physical problem.

Text Books :

1. Engineering Mathematics-II By : Shanti Narayan
   2. S. Chand & Company (PVT.) Ltd.,Ram nagar, Delhi
   Higher Engineering Mathematics. By : Dr. B.S.Grewal
   Khanna publishers, Delhi

Ref. Books :

1. Engineering Mathematics-I By : Shanti Narayan
   S. Chand & Company (PVT.) Ltd.
   2. Applied Mathematics
   By : P.N. & J.N. Wartikar
3. Engineering Mathematics-I By : I.B. Prasad

AF122 - BASIC ELECTRICAL & ELECTRONICS ENGINEERING
SYLLABUS & SCHEME
w.e.f. July 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4		2	4	1	**5**

1. FUNDAMENTALS OF CURRENT ELECTRICITY AND DC CIRCUITS:

Introduction: Definition, Symbol and Unit of Quantities, Multiple and sub-multiple units, Computation of Resistance at constant temperature, Temperature dependence of resistance, Computation of resistance at different temperatures, Computations of at different temperatures, Ohm's law statement, Illustration and limitation, Unit work, power and energy   (Electrical,   Thermal   and Mechanical),Circuits-Identifying   the   elements   and   the   connected terminology., Kirchhoff's laws-statement and illustration, Resistance in parallel and current division technique, Method of solving a circuit by kirchhoff's laws.

2. MAGNETIC CIRCUITS

Introduction, Definition of Magnetic questions, Magnetic circuit, Leakage flux, Fringing effect, Comparison between magnetic and electric circuits.

3. ELECTROMAGNETIC INDUCTION

Introduction, Magnetic effect of electric current, Current carrying conductor in magnetic field, Law of electromagnetic induction, Induced emf, Self inductance (L) ,Mutual inductance(M), Coupling coefficient between two magnetically coupled circuits(K).

4. AC FUNDAMENTALS

Introduction, Generation of alternating emf, Waveform terminology, Concept of 3-phase EMF Generation, Root mean   square (RMS) ot effective value, Average Value of AC, Phases representation of alternating quantities ,Analysis of AC circuit.

5. SINGLE PHASE AC CIRCUITS

Introduction, j operator, Complex algebra, Representation of alternating quantities in rectangular and polar forms, R-L series circuit, R-C series circuit, R-L-C series circuit, Admittance and its components, Simple method of solving parallel A.C. circuits, Resonance.

6. ELECTRICAL MACHINES

Introduction, D.C.generator, D.C. motor, Transformer, Three phase induction Motor, Applications of electrical machines.

7. PASSIVE CIRCUIT COMPONENTS

Constructional details of: Resistors, Capacitors, Inducers.

Text Book:

1)   Basic Electrical, Electronics and Computer Engineering.
By- R.Muthusubramanian, S.Dslivshsnsn, K.A.Muraleedharan
Tata McGraw Hill Publishing Co Ltd (1994) New Delhi.

Ref. Books :
1   Electrical Engineering.

                                    By: B. L. Theraja
2.   Electrical Machines
By: B. L. Theraja

B.E./B.Tech SEMESTER – I (IT)
CT 115 – LINUX OS & PROG.

SYLLABUS & SCHEME   w.e.f.   July 2008

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
3	--	2	3	1	**4**

1. Linux Architecture
Kernel, shell and applications-Role of kernel, role of shell, different   types   of shells. File system/directory structure, multitasking and multi-user system, operating modes (RC scripts, Init levels), important concepts in a Linux environment - Login, login scripts and profiles, X window system, the GUI under Linux, different window manager, file concepts.

2. Linux Basics
Basic commands - who, pwd etc.
File manipulation under Linux - copy, rename, delete and move directory listing, file handling and IO redirection.
Users and groups - Concepts of users and groups, owner creator, primary and secondary group, types of file and directory permissions.
Command Line Interface - Additional text manipulation commands, e.g. grep, links, find, locate, ed & vi editors, regular expressions & grep, pipes, filters, sed, awk.

3. Shell Programming
Working with bash - login scripts and profits
Understanding shells, using variables, examining Linux configuration script files, working with the
PATH and CDPATH
variables.

Shell programming using sed, awk

Core Shell Programming

Creating a shell script, using variables, functions, parameters, control structures, test, parameter expansion.

Text Book :
(1) Linux Shell Script Programming by Todd Meadors
(2) Unix Shell Programming by Stephen Kochan (Revised ed) (3) Linux and Unix shell Programming by David Tansley
(4) Sams Teach yourself shell programming in 24 hours, 2nd ed by
Sriranga Veeraraghavan

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
3	--	**2**	**3**	**1**	**4**

[A]STATICS:
Introduction, engineering and S.I.units, accuracy in engineering calculations, Vectors composition

and resolution, concept of Rigid Body. Resultant of a force system :
i) Concurrent Co planner Force System
ii) Non concurrent Co planner Force System
(a) parallel and (b) non parallel
Using analytical as well as graphical methods.
iii) Simple cases of concurrent force system in space.

Concept of internal force, free body diagram. Equilibrium of force system listed above.

Friction: Friction on an inclined plane, ladder friction, wedge friction, screw friction, belt and rope drive.

Centre of gravity of lines, plane figures, volumes, bodies and Pappu's Theorem. Principle of Virtual Work and its application.

Types of Beams, Types of Supports, Support Reaction for statically determinate beams.

[B]DYNAMICS:
Rectilinear motion, Circular motion, Projectiles, Relative velocity, Instantaneous center in plane motion.

Laws of Motion, Motion along an inclined plane, Principle of conservation of Momentum, Mass Moment of Inertia in Rotational Motion, Motion of connected bodies, Impulse and Momentum, Impact, work power and Energy, D Alembert's principle, vibrations of SDOF systems. Motion along a smooth curve and super elevation.

Term work:-
(1)Experiments (2) Problems based on theory .

Text Books:
[1] Mechanics for Engineers - Statics
By : F.P.Beer and E.R.Johnston Jr.

[2] Mechanics for Engineers - Dynamics
By :F.P.Beer and E.R.Johnston Jr.

[3] Engineering Mechanics: Statics & Dynamics
By: A.K.Tayal

B.E./B.Tech SEMESTER – I (IT)
AF 116 – WORKSHOP-I
SYLLABUS & SCHEME
w.e.f. July 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
--	--	3	0	1.5	**1.5**

[A] INSTRUCTION:
Kinds of wood, types of carpentry tools, carpentry joints, Plumbing tools, pipe fittings, tin smithy
and soldering tools.

[B] DEMONSTRATIONS:
Operation of wood working machines.

[C] TERM WORK:
Each candidate shall submit the following term work.

1. Practice job in carpentry   ---- One job.

2. Simple carpentry joint   ---- One job.

3. Threading of pipe and pipe fittings ---- One job.

4. Tin smithy and soldering   ---- One job.

B.E./B.Tech SEMESTER – I (IT)

AF 115 – ENINEERING GRAPHICS
SYLLABUS & SCHEME
w.e.f. July 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	**--**	**3**	4	1.5	**5.5**

TOPICS:

(a) Plane Geometry: Engineering Curves:
Construction of curves used in engineering such as Conics
(Ellipse, Parabola, Hyperbola)
Cycloidal curves -Cycloid, Epi-Cycloid, Hypo-Cycloid, Involutes, Archemedian spirals

(b) Solid Geometry:
Projections of Points, Projections of Lines, construction for H.T. & V.T.
Applications of projection of points and lines
Projections of regular planes such as square, rectangle, triangle,
circle, pentagon, hexagon, rhombus, etc
Projections of Right & Regular Solids (Prisms, Pyramids, Cylinder and Cone)

(a) Orthographic Projections:
First angle projection method and third angle projection method. Dimensioning techniques
and methods.
Conversion of pictorial views into Orthographic Projections with dimensions.

(b) Sectional orthographic projection.:
Orthographic vies with section, types of sections – Full section,
Half section, offset section, Local section, Partial section, Conventions adopted for sectional
views, interpretation of orthographic views.

(d) Isometric Projections:
Conversion of Orthographic views into Isometric Projections and views

(e) Machine parts:
Sketches of various important machine parts with empirical dimensions: Types of threads,
Bolts, various types of Nuts, Locking devices for Nuts, Rod connections like Cotter Joint &
Knuckle Joint, Shaft Couplings like protected type shaft coupling and pin type flexible
coupling, Bearings, Welded Joints, etc.

(f) Computer Graphics:
Introduction to Computer Graphics.

TERM WORK:
The term work shall be based on the above syllabus.

TEXT BOOKS:
1.   Engineering Drawing   *By: N. D. Bhatt*
2.   Engineering Drawing Vol.1 & Vol. 2.   *By: P.J. Shah*

REFERENCE BOOKS:

1.   Fundamentals of Engineering Drawing. *By: Luzadder*
2.   A Text Book of Geometrical Drawing.   *By: P. S. Gill*
3.   A Text Book of Machine Drawing *By: P. S. Gill*

B.E./B.Tech SEMESTER – II (IT)
AF 201-MATHEMATICS-II
SYLLABUS & SCHEME
w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	--	4	0	**4**

[A]   PARTIAL DIFFERENTIATION & ITS APPLICATIONS :
Partial derivatives, Homogenous functions Euler's theorem, Total derivatives - Differentiation of implicit functions, Change of variables, errors and approximations, Maxima & Minima of functions of two variables, Lagrange's method of undetermined multipliers.

[B]   MULTIPLE INTEGRALS & THEIR APPLICATIONS :
Double integrals, definition evaluation, change of order of integration, double integrals in polar co-ordinates, area enclosed by plane curves, Triple integrals, change of variables, volume of solids.

[C]   INFINITE SERIES :
Introduction, Definitions, Convergence, divergence and Oscillation of a series, P-test, Comparision test, Ratio test, Root test, Higher rario test, Rabbe's test, Log test, Alternating Series, Leibnitz's rule.

[D]   COMPLEX NUMBER :
Definition, elementary operations, Argan's diagram, De- Moivre's theorem, and its applications To expand $\sin n\theta, \cos n\theta$ in powers of $\sin\theta$, $\cos\theta$ respectively, To expand $\sin^n\theta$,$\cos^n\theta$ and $\sin^m\theta . \cos^n\theta$ in a series of Sines or Cosines of multiples of θ, Hyperbolic functions, Formulae of hyperbolic functions, Inverse hyperbolic functions, Logarithm of complex quantities. Separation of real and imaginary parts. C + iS method.

[E]   LAPLACE TRANSFORMS :
Introduction, Definition Transforms of elementary functions, properties of Laplace tramsforms, Inverse transforms, Note on partial fractions, Transforms of derivatives,Transforms of integrals. Multiplication and division by t, convolution theorem.

Text Books :
1.Higher Engineering Mathematics
By : Dr. B.S. Grewal
(Khanna publisers,Delhi.)

Ref. Books :
1.Applied Mathematics for Engineers and Physicists.

By : Pipes & Harvill
(Mc-Graw Hill Kogakusha Ltd.)
2.Applied Mathematics
By : P.N. & J.N. Wartikar

B.E./B.Tech SEMESTER – II (IT)
AF 212 ELECTRONICS PRINCIPLES
SYLLABUS & SCHEME

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. DIODE THEORY
Semiconductor theory, Conduction in crystals, Doping source, The unbiased diode, Forward bias, Reverse bias, Linear devices, The diode graph, Load lines, Diode approximations, D.C. resistance of a diode.

2. DIODE CIRCUITS
The since wave, The transformer, The half wave rectifier, The full wave rectifier, The bridge rectifier, The capacitor input filter.

3. SPECIAL PURPOSE DIODES
The zener diode, The dener regulator, Optoelectronic devices.

4. BIPOLAR TRANSSISTOR
Some basic ideas, Forward-reverse biad, The CE connection, Transistor characteristics, DC load lines, The transistor switch.

5. TRANSISTOR BIASING CIRCUITS
Base bias, Emitter-feedback bias, Collector--feedback, Voltage divider bias, Emitter bias, Moving ground around, PNP circuits.

6. CE AMPLIFIERS
Coupling and bypass capacitors, The superposition theorem for amplifiers, AC resistance of the
emitter diode, AC beta, The grounded emitter amplifier, The ac model of a CE stage.

7. CC AND CB AMPLIFIERS
The CC amplifier, The ac model of an emitter follower, Types of coupling, Direct coupling.

8. CLASS A AND B POWER AMPLIFIER
The ac load line of a CE amplifier, AC load lines of other amplifier, Class-A operation.

9. OP-AMP CIRCUITS
Non inverting voltage amplifiers, The inverting voltage amplifiers, The summing amplifier, Comparators.

10. OSCILLATORS AND TIMERS
Theory of sinusoidal oscillation, The wein-bridge oscillator.

11. THYRISTORS
The ideal latch, The four-layer diode, The silicon controlled rectifier.

12. FREQUENCY DOMAIN
The Fourier series, The spectrum of a signal.

13. FREQUENCY MIXING

Non-linearity, Medium-signal, operation with one sine wave, Medium signal operation with two sine waves.

14. AMPLITUDE MODULATION

Basic idea, Percent modulation, AM spectrum, The envelope detector, The super heterodyne receiver.

15. DIGITAL ICS

Number system, Boolean algebra, Logic gates.

Text Books:

(1)Electronic Principles (Third Edition) By- Albert Paul Malvino
Tata McGraw Hill Publishing Co.Ltd,New Delhi.

2)Basic Electrical,Electronics & Computer Engg.
By-R.Muthusubramanian, S.Salivahanan, K.A.Muraleedharan. Tata McGraw Hill Co,Ltd,New Delhi.

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
3	--	2	3	1	4

1.   Introduction

2.   Types, operators and expressions
Variable names, data types & sizes, constant, declarations, Operators : arithmetic, relational,
logical, bitwise, short hand, ternary & assignment, conditional expression & procedures.

3 .   Control flow & I/O operators:
If-else-if, switch,

3A.   Loops:
While, for, and do-while, go to, break and continue statement.

4.   Arrays:
Introduction,one-dimensional array,Declaration and Initialization of one-dimensional array, Introduction of Two-dimensional array,Initialization and declaration, Multi-dimensional array

5   Handling of character strings:
Introduction, declaring and initializing string variables, reading and writing strings, arithmetic operations on character, putting strings together, comparison of two strings, strings-handling functions, table of strings, case functions, case study.

6.   User Defined Functions:
Need of user defined functions, multi-function program, calling a function, category of functions, no argument and no return values, arguments but no return values, arguments with return values, nesting of function, recursion

7.   Structure and unions:
Introduction, structures definition, giving values to members, structure definition, giving values to
members, structure initialization, comparison of structure variables, arrays of structures, arrays within structure, structure and function, unions, size of structures, bit fields, case studies.

8.   Pointers:
Introduction, understanding of pointers, accessing the address of a variable, declaring and initializing pointers, accessing a variable through its pointers, pointers expressions, expressions, pointer increments and scale factor, pointers and arrays, pointers and character strings, pointers on pointers, case studies.

9.   File Management in 'C'
Introduction, defining and opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access to files, command line arguments, case studies.

Text Book: Programming in ANSI C by Balagurusamy, 2nd Ed., TMH

B.E./B.Tech SEMESTER – II (IT)
AF 204 MECHANICS OF SOLID
SYLLABUS & SCHEME   w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
3	--	2	3	1	**4**

[A]SIMPLE STRESSES AND STRAINS:

Introduction, stress, strain, tensile, compressive and shear stresses, Elastic limit, Hooke's law, Poisson's Ratio, Modulus of Elasticity, Modulus of Rigidity, Bulk Modulus, Bars of Varying sections, Extension of tapering rods, Bars of uniform   strength, temperature stresses, Hoop stress, stress on oblique sections, State of simple shear, Relation between Elastic constants.

[B] MECHANICAL PROPERTIES OF MATERIALS:

Ductility, Brittleness, Toughness, Malleability, Behavior of ferrous and   non ferrous metals in
tension and compression, shear and bending tests, Standard test pieces, Influence of various parameters on test results, True and nominal stress, Modes of failure, Characteristic stress-strain curves, Strain hardening, Hardness, Different methods of measurement, Izod, Charpy and tension impact tests, Fatigue, Creep,   Correlation between different mechanical properties, Effect of emperature. Testing machines and special   features,   Different   types   of   extensometers   and   compressometers, Measurement of strain by electrical resistance strain gauges.

[C] BENDING MOMENT AND SHEAR FORCE:

Bending moment, shear force in statically determinate beams subjected to uniformly distributed, concentrated and varying loads. Relation between bending moment, shear force and rate of loading.

[D] MOMENT OF INERTIA:

Concept of moment if Inertia, Moment of Inertia of plane   areas, polar moment of Inertia, Radius
of gyration of an area, Parallel Axis   theorem, Moment of Inertia of composite Areas, product of Inertia, Principal axes and principal Moments of Inertia.

[E] STRESSES IN BEAMS:

Theory of simple bending, Bending stresses, moment of resistance, modulus of section, Built up and composite beam section, Beams of uniform strength, Distribution of shear stress in different sections.

[F] TORSION:

Torsion of circular. Solid and hollow section shafts, shear stress angle of twist, torsional moment of resistance, power   transmitted by a shaft, keys and couplings, combined bending and torsion, close coiled helical spring

[G] PRINCIPLE STRESSES AND STRAINS:

Compound stresses, principle planes and principle stresses, Mohr's circle of stress,

principle strains, Angle of obliquity of resultant stresses, principle stresses in beams, principle stresses in shafts subjected to bending, torsion and axial force.

Term work:-

This will consists of experiments and solution of problems based on syllabus.

Text Book:

(1) Strength of Materials - by Timoshanko (Vol.1 & 2) (2) Strength of Material - by Popov (3) Mechanics of structure -by Junnarkar S.B. (4) Strength of Materials- by S.Ramamrutham.

B.E./B.Tech SEMESTER – II (IT)
AF 215 HEAT POWER
SYLLABUS & SCHEME
w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
3	--	2	3	1	**4**

(1) PROPERTIES OF STEAM:
Distinction between gas and vapour, sensible heat, latent heat, total heat and super heat of steam, condition of steam, dryness fraction, methods of determination of dryness fraction, internal energy of steam, specific volume, critical pressure and temperature.

(2) PROPERTIES OF GASES:
Zeroth, first and second laws of thermodynamics, laws of perfect gases(Boyle's law, Charle's law, Regnault's law, Joule's law), Characteristic equation of gas, gas constants, internal energy, specific heat at constant pressure and specific heat at constant volume, relationship between specific heats, thermodynamic processes of perfect gases

(3) FUELS & COMBUSTION:
Solid, liquid and gaseous fuels used for boilers and I.C. engines, combustion of fuels, air required, products of combustion of fuel, analysis of flue gases, calorific value of fuels and its determination

(4) BOILERS:
Classification of boilers, Cochran & Babcock-wilcox boiler, boiler mountings and accessories, draught (Natural & Artificial)

(5) I. C. ENGINES:
Prime movers, classification of prime movers with examples of each classes, advantages of I.C. engines over E.C. engines, classification of I.C. engines, thermodynamic air cycles (Carnot cycle, Constant volume auto cycle, Constant pressure Joule cycle, Diesel cycle), Air standard efficiency, construction and working of 2–stroke and 4–stroke cycle engines, P-v diagrams, determination of I.P., B.P., fuel supply in I.C. engines, ignition system of I.C. engines, Cooling of I.C. engines, Lubrication & governing of I.C. engines

(6) SOLAR ENERGY:
Introduction to solar energy systems

TERM - WORK:
Term – work shall be based on the above syllabus

TEXT – BOOKS:
(1)   Elements of Heat Engines (S.I. Units) Vol. 1
By: R. C. Patel & C. J. Karamchandani, Acharya Book Depot, Vadodara
(2)   Elements of Heat Engines (S.I. Units)

By: N. C. Pandya & C. S. Shah, Charotar publishing house, Anand

REFERENCE BOOKS:
(1)   Heat Engine
By: P. L. Ballaney
(2)   A course in thermodynamics and heat engines
By: Kothandraman

B.E./B.Tech SEMESTER – II (IT)
AF 206 – WORKSHOP-II
SYLLABUS & SCHEME
w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
--	--	3	0	1.5	**1.5**

[A] INSTRUCTION:
Introduction to fitting shop tools, taps, dies, drills, drilling machines, welding process, welding
equipment for arc welding, forging tools, forging, bending, upsetting, drawing, adhesive bonding.

[B] DEMONSTRATIONS:
Demonstration of general operation of drilling, turning, shaping.

[C] TERM WORK: Each candidate shall submit the following term work.

    1. Filing and fitting practice   ---- One job.

    2. Simple welding joint   ---- One job.

    3. Forging practice   ---- One job.

4. Wooden utility job with adhesive   ---- One job. bonding

    5. PCB making   ---- One job.

B.E./B.Tech SEMESTER – III (IT)
AF301 MATHEMETICS – III
SYLLABUS & SCHEME
w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	--	4	0	**4**

[A] FOURIER SERIES :
Euler's Formulae, condition for a Fourier expansion, functions having points of discontinuity, change of
interval, odd & even functions, Expansion of odd & even periodic functions, Half-range series, practical harmonic analysis.

[B] NUMERICAL METHOD :
Solution of algebraic and transcendental equations, byNewton - Raphson method, Direct iteration method, false   position method, Solution of linear simultaneous equation : (1) Gauss - elimination (2) Gauss - Jordan (3) Gauss - Siedal method , Numerical methods to solve first order and first degree ordinary differential equations by Picard's   method &Taylor's series method, Euler's Method, Modified Euler's Method, Milne's Method, Runge's method, Runge kutta method.

[C] INTEGRAL TRANSFORMS :
Definition, Fourier integral, Fourier sine & cosine integrals, Complex form of Fourier integral, Fourier transform, Fourier sine & cosine transforms, finite Fourier sine & cosine transform, fourier transform of the derivative of a function, Inverse Laplace transform by method of residues, Application of transforms to boundary value problems.

[D]   DIFFERENTIAL EQUATIONS :
Linear differential equations of higher order with constant coefficients, equations reducible to linear equations with constant coefficients, Simultaneous linear equations with constant coefficients. Application to engineering problems. Series solution of differential equations of the second order with variable coefficients.

[E] PARTIAL DIFFERENTIAL EQUATIONS :
Introduction, formation,linear equation of first order, non- linear equations of first order- Charpit's method,
homogenous linear equations with constant coefficient to find the complementary functions & the particular integral, non- homogenous linear equations with constant coefficients. Monge's Method, Method of separation of variables - vibrating string problem, Heat flow equation etc.

[F] LAPLACE TRANSFORMS :
Application to differential equation, simultaneous linear equation with constant coefficients.

Text Books :

(1) Higher Engineering Mathematics
                                                By : Dr. B.S.Grewal

Ref. Books :

(1)A Text Book of Applied Mathematics

By : P.N. & J.N. Wartikar

(2) Mathematics for Engineering

By : Chandrika Prasad

(3) A Text Book of engineering Mathemetics

By : Dr. K.N.Srivastva & G.K.Dhawan

CT 311 ANALOG ELECTRONICS

SYLLABUS & SCHEME

w.e.f.July 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. FREQUENCY RESPONSE OF AMPLIFIERS:

Frequency Distortion, Step Response of an Amplifier, Effect of Coupling and Emitter Bypass Capacitors on Low frequency, response, The RC-Coupled Amplifier, The Hybrid Pi Transistor Model at High Frequencies, Variations of Hybrid Pi Parameters, The CE short-circuit Current Gain, The Generalized Voltage-Gain Function, Single-Stage CE Transistor Amplifier Responses, The Gain- Bandwidth Product, Emitter Follower at High Frequencies, High-Frequency Response of Two Cascaded CE Transistor Stages

2. FIELD EFFECT TRANSISTORS:

The Junction Field-Effect Transistor, The JFET Volt-Ampere Characteristics, Fabrication of JFETs, The Enhancement Metal-Oxide-Semiconductor Field-Effect, Transistor (MOSFET), The Depletion MOSFET, Technological Improvements. Biasing the Field-Effect Transistor. The JFET or MOSFET Small-Signal Model, the Low-Frequency Common-Source and Common-Drain Amplifiers, The JFET as Voltage-Controlled Resistor (VCR).

3. OPERATIONAL_AMPLIFIER CHARACTERISTICS:

The Basic Operational Amplifier, The Differential Amplifier, The Emitter-Coupled Differential Amplifier, Transfer Characteristics of a Differential Amplifier, Operational Amplifier Design Techniques, Offset Error Voltages and Currents, Measurement of Operational Amplifier Parameters, Frequency Response of Operational Amplifiers, Compensation, Dominant-Pole Compensation, Pole-Zero Compensation, Lead Compensation.

4. Operational AMPLIFIER SYSTEMS:

Basic Operational Amplifier Applications, Differential (Instrumentation) Amplifiers, AC-Coupled Amplifier, Analog Integration and Differentiation, Electronic Analog Computation, Active Filters, Active Resonant Band pass Filters, Precision AC/DC Converters, Sample-and-Hold Systems, Analog Multiplexer and Demultiplexer, Logarithmic and Exponential Amplifier, Digital-to- Analog(D/A) Converters, Analog-to-Digital(A/D) Converters.

5. WAVESHAPING AND WAVEFORM GENERATORS:

Clipping (Limiting Circuits, Clipping at Two Independent Levels, Additional Diode Circuits. Comparators, Applications of Comparators, Regenerative Comparators (Schmitt Trigger), Square- Wave and Triangular-Waves Generators, Pulse Generators, Voltage Time-Base Generators, Step (Staircase) Generators, Modulation of a Square Wave, Sinusoidal

Generators, The Phase-Shift Oscillator, A General Form of Oscillator Configuration, The Wien Bridge Oscillator Crystal Oscillators.

6. POWER CIRCUITS AND SYSTEMS:
Large-Signal Amplifiers, Harmonic Distortion, Amplifier Classification, Efficiency of a Class A Amplifier, Class B Push-Pull Amplifiers, Class AB Operation, Integrated-Circuit Power Amplifiers, Thermal Considerations, Regulated Power Supplies, Monolithic Regulators, A Switching Regulator, Switching Regulator Topologies, Power Field-Effect Transistor(VMOS).

7. FEEDBACK AMPLIFIER CHARACTERISTICS & ITS FREQUENCY RESPONSE:
Classification of amplifiers, The feedback concept, the transfer gain with feedback, general characteristics of negative feedback amplifiers, input resistance, output resistance, method of analysis of a feedback amplifier Effect of feedback on amplifier bandwidth, double-pole transfer function with feedback, approximate analysis of a multiple feedback amplifier, stability, bode plots

Text Book:
Integrated Electronics
By: Millman and Halkinson   Publication: McGraw-Hill International

Reference Book:
(1) Op-Amps & Linear Integrated circuits
By: Ramakant Gaekwad, Publication: Prentice-Hall of India
(2) Electronic Devices & Circuit theory
By: Robert L. Boylestad & Louis Nashelsky   Publication: Prentice-Hall of India
(3) Integrated Circuits
By: K. R. Botkar Publication: Tata McGraw-Hill

B.E./B.Tech SEMESTER – III (IT)
EL 304 NETWORK ANALYSIS
SYLLABUS & SCHEME w.e.f. July 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

[A] DEVELOPMENT OF THE CIRCUIT CONCEPT:
Introduction, Charge and Energy, The Relationship of Field and Circuit Concepts, The Capacitance Parameter, The Inductance Parameter, The Resistance Parameter, Units and scaling, Approximation of a Physical System as a circuit.

[B] CONVENTIONS FOR DESCRIBING NETWORKS:
Reference Directions for Current and Voltage, Active Element Conventions, The Dot Convention for Coupled Circuits, Topological Description of Networks.

[C] NETWORK EQUATIONS:
Kirchoff's Laws, The Number of Network Equations, Source Transformations, Examples of the Formulation of Network Equations Loop Variable Analysis, Node Variable Analysis, Determinants: Minors and the Gauss Method, Duality.

[D] INITIAL CONDITIONS IN NETWORKS :
valuating Initial Conditions, Initial State of a Network, Application of LaplaceIntroduction,
Initial Conditions in Elements, Geometrica   Interpretation of Derivatives, A Procedure for E Transform to solution of 1st and 2nd order differential equations arising in electrical circuits.

[E] SOLUTION OF DIFFERENTIAL EQUATIONS:
Classical method of solution of first order and second order differential equations. Solution of first order and higher order differential equations using Laplace Transformation.

[F] TRANSFORMS OF SPECIAL SIGNAL WAVEFORMS :
The Shifted Unit Step Function, The Ramp and impulse Functions, Waveform Synthesis, The Initial and Final Value of f(t) from F(s),The Convolution Integral, Convolution as Summation.

[G] IMPEDANCE FUNCTIONS AND NETWORK THEOREMS :
The Concept of Complex Frequency, Transform Impedance and   Transform Circuits, Series and Parallel Combinations of Elements, Superposition and Reciprocity, Thevenin's Theorem and Norton's Theorem.

[H] NETWORK FUNCTIONS : POLES AND ZEROS :
Terminal Pairs or Ports , Network Functions for One Port and Two port . The Calculation of Network Function (1) Ladder Networks (2) General Networks, Poles and Zeros of Network Functions, Restrictions on Pole and Zero Locations for Driving-Point Functions Restrictions on Pole and Zero locations for Transfer Functions, Time-domain Behavior from the Pole & zero plot.

[I] FREQUENCY RESPONSE PLOTS :

Parts of Network Functions, Magnitude and Phase Plots, Complex Loci, Plots from s-Plane Phases, Bode Diagrams.

Text Book:

(1) Network Analysis By : M.E. Van Valkenburg.

Ref Book:

(1) Network Analysis By : G. K. Mithal.

B.E./B.Tech SEMESTER – III (IT)
IT 303 OBJECT ORIENTED PROGRAMMING

SYLLABUS & SCHEME   w.e.f JULY 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

[1]Programming in C++
C++ programming basics, loops, structures, functions, arrays Output using cout, input with cin, manipulators, type conversion

Various loops: for, while and do-while

Decision making: if, if-else, switch statement and conditional Operator

Specifying the structure, accessing structures members, structures within structures, enumerated data types.

Simple functions, passing arguments to functions, returning values from functions, reference arguments, overloaded functions, inline functions, default arguments, variables and storage classes, returning by reference

[2]Objects and classes, arrays and operator-overloading
Characteristics of Object-Oriented Languages.

Objects, classes, constructor, destructor, returning objects from functions, structures and classes, static class data

Array fundamentals, arrays as class member data, arrays of objects, strings. Overloading unary operators, overloading binary operators, data conversion.

[3]Inheritance and pointers
Derived class and base class, derived class constructors, overriding member functions, public private and public inheritance, multiple inheritance, containership.

Addresses and pointers, pointers and arrays, pointers and functions, pointer and strings, memory management : new and delete, pointers to objects, pointers to pointers.

[4]Virtual functions, files and streams
Virtual functions, friend functions, static functions, assignment and copy-initialization, this pointer.

Streams, string I/O, character I/O, I/O with multiple objects, file pointers, Disk I/O with member functions, Error handling, Redirection, Command line arguments, overloading the extraction and insertion operators.

Textbooks:
(1) The waite group's Object-Oriented Programming In Turbo C++, Robert Lafore

(2) Reference book: C++ Programming Design TMH publications, Davidson and Cohoon

B.E./B.Tech SEMESTER – III (IT)
IT 301 DESIGN OF DIGITAL CIRCUITS

SYLLABUS & SCHEME   w.e.f JULY 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

[A] BINARY SYSTEMS:
Introduction to Digital Computers and Digital Systems, Binary Numbers, Number Base
Conversion, Octal and Hexadecimal Numbers, complements, binary Codes, Binary Storage and
Registers, Binary Logic, Integrated Circuits.

[B] BOOLEAN ALGEBRA AND LOGIC GATES:
Basic Definitions, Axiomatic Definition   of Boolean   Algebra,Basic Theorems and Properties of
Boolean Algebra, Boolean Functions, Canonicaland   Standard   Forms,   Other Logic
Operations, Digital Logic Gates, IC Digital Logic Families.

[C] SIMPLIFICATION OF BOOLEAN FUNCTIONS:
The Map Method, Two and Three Variable Maps, Four-Variable Map, Five and Six Variable
Maps, Product of Sums Simplification, NAND and NOR Implementations, Don't-Care
Conditions, The Tabulation Method, Determination of Prime- Implicants, Selection of
Prime-implicants, Concluding Remarks.

[D] COMBINATIONAL LOGIC:
Introduction, Design Procedure, Adders, Subtractors, Code Conversion, Analysis
Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits, Exclusive OR and Equivalence
Functions.

[E] COMBINATIONAL LOGIC WITH MSI AND LSI:
Introduction,Binary   Parallel   Adder,   Decimal   Adder,   MagnitudeComparator,
Decoders, Multiplexers, Read-Only Memory (ROM), Programmable Logic Array (PLA),
Concluding Remarks.

[F] SEQUENTIAL LOGIC:
Introduction, Flip-Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits,
State Reduction and Assignment, Flip-Flop Excitation Tables, Design Procedure, Design
of Counters, Design with State Equations.

[G] REGISTERS, COUNTERS AND THE MEMORY UNIT:
Introduction,   Registers,   Shift   Registers,   Ripple   Counters,Synchronous   Counters,
Timing
Sequences, The Memory Unit, Examples of Random Access Memories.

[H] DIGITAL INTEGRATED CIRCUITS:
Introduction, Bipolar Transistor Characteristics, RTL and DTL   Circuits, Integrated-Injection Logic,
Transistor-Transistor   Logic, Emitter-Coupled   logic,   Metal-Oxide

Semiconductor, Complementary MOS.

Text Book:

(1) Digital Logic and Computer Design

By: M.Morris Mano

Ref Book:
(1) Microelectronics
By: Jacob Millman & Arvin Grabel, Second Edition
McGraw - Hill International Edition

B.E./B.Tech SEMESTER – III (IT)
IT 302 COMPUTER PERIPHERALS

SYLLABUS & SCHEME   w.e.f JULY 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
--	--	2	0	1	**1**

1. Assembling of computer.
2. Study of various motherboards (8088/XT, 286, 386,...P-III)
3. Study of CMOS - setup options
4. Hard disk partitioning
5. Creation of DOS and windows-95/98 Bootable disk
6. Installation of DOS and windows - 95/98
7. Installation of sound and display drivers.
8. Study of floppy disk drive,(show Norton format), hard disk Drive
9. Study of keyboard, monitor, mouse and printer
10. Study of IDE, Display and network cards.
11. Study of virus and anti-virus packages.
12. Study of network topologies & win98 peer to peer networking

Ref. Book :

(1) PC Upgrade and Maintainance by Mark Minasi
(2) IBM PC and clones Govind Rajalu

B.E./B.Tech SEMESTER – IV (IT)
AF 401 MATHEMATICS – IV
SYLLABUS & SCHEME w.e.f. Dec 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	--	4	0	**4**

[A] FUNCTIONS OF COMPLEX VARIABLE :
Analytic functions, Cauchy -Riemann equations, Harmonic functions, orthogonal system, complex
potential function, Determination of conjugate function, conformal transformation, some standard transformations, bilinear transformation, line integral, properties of complex integration, Cauchy's theorem and Cauchy's integral formula.

[B] MATRICES :
Fundamental concepts, operations, associated matrices, matrix method of solution of simultaneous equations, Rank of matrix, Linear dependence of vectors, consistency of a system of linear equations, characteristic equation, eigen roots & eigen vectors , Cayley - Hamilton theorem. Reduction of quadratic form to canonical form.

[C] FINITE DIFFERENCES & DIFFERENCE EQUATIONS :
Finite difference, Interpolation,Newton's forward and backward and central differences and Lagrange's formula, Sterling & Bessel's formula, Numerical differentiation & Integration, Trapezoidal rule, Simpson's (both) rules, Difference equations with constant coefficient. Z transform.

[D] VECTOR CALCULUS :
Vector function of a single scalar variable, Differentiation of vectors, simple applications to plane, motion, scalar and vector point functions, Del applied to scalar point function (gradient) Divergence of a vector point function, curl of a vector, second order expressions, line integrals, surface integrals, Green's theorem, Gauss theorem and stoke's theorem.

[E] STATISTICAL METHODS :
Binomial distribution, poisson distribution, normal distribution, calculation of errors, probable errors, standard error, coefficient of correlation, lines of regression.

Text Books :
(1) Higher Engg. Mathematics
By : Dr. B.S.Grewal

Ref. Books :
(1) A Text Book of Applied Mathematics

By : P.N. & J.N. Wartikar & Chandrika Prasad.

B.E./B.Tech SEMESTER – IV (IT)
IT 406 DATA STRUCTURES AND ALGORITHMS

SYLLABUS & SCHEME   w.e.f DEC 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1 Basic Concepts
Algorithm Specification

2 Arrays
Array as an abstract Data type, Representation of Arrays

3 Stacks and Queues
Stack as an abstract data type, Queue as an abstract type, Evaluation of Expressions

4 Linked Lists
Singly Linked Lists, Circular Lists, Linked Stacks and Queues, Polynomials, Doubly Linked Lists, Generalized Lists

5 Trees
Introduction, Binary Trees, Binary tree traversal and tree iterators, Additional Binary tree operations, threaded binary trees, heaps, binary search trees, forests, Huffman Algorithm

6 Graphs
The Graph Abstract data type, Elementary Graph operations, Shortest path – Dijkstra's algorithm

7 Sorting
Insertion sort, quick sort, merge sort, heap sort, sorting on several keys, list and table sort, summary of internal   sorting

8 Hashing
Static Hashing

9 Search structures
AVL Trees, 2-3 Trees, 2-3-4 Trees, Red-Black trees, B-trees, Digital Search Trees, Tries

Text Book:
Fundamentals of Data Structures using C++ by
Horowitz, Sahni, Galgotia Pub. 1998 ed.

Ref. Book:
(1) Data Structures& Algorithms, Aho, Ullman, Addision Wesley
(2) An Introduction to Data Strucures with applications, Tremblay, Sorenson, McGraw Hill.
(3) The art of Computer Programming Vol.I & III, Kunth, Addision Wesley.
(4) Data Structures using C and C++ Yedidyah Langsam, Tenenbaum

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
1	--	1	1	0.5	**1.5**

(A) THEORY

1) VYUTPATTI OF YOGA
2) DEFINITIONS OF YOGA
3) ORIGIN OF YOGA
4) HISTORY OF YOGA
   - IN PRE CLASSICAL ERA
   - IN CLASSICAL ERA
5) FIRST DOCUMENTATION ON YOGA
6) PERSONALITIES OF YOGA
7) TYPES OF YOGA
8) ASTANGA YOGA
9) YAMA
10) NIYAMA
11) ASANA
- DEFINITIONS
- TYPES OF ASANA
- ASANA ACCORDING TO THE SYSTEMS, ORGANS AND DISEASES
12) PRANAYAM
- DEFINITIONS
- TYPES OF PRANAYAM
- EFFECTS OF PRANAYAM ON EACH SYSTEM
13) KUNDALINI & SUBTLE SYSTEM
14) PRATYAHAR
- THE CONCEPT OF INDRIYA PANCH-PANCHAK
15) DHARNA
- FIVE STAGES OF THE MANA
16) DHYANA
17) SELF REALIZATION
18) SAMADHI
- DEFINITION
- TYPES
- THE CONCEPT OF PANCH KOSHA
19) MUDRA, MAHAMUDRA, BANDHAS AND SHAT KARMAS
20) STRESS MANAGEMENT
21) MISCONCEPTIONS REGARDING YOGA
22) YOGIC AHARA – YOGINO PATHYAPATHYA

(B) PRACTICAL (Basic Asans)
TRAINING IN YOGIC ASANAS, PRANAYAMS AND MUDRAS

1. Initial in every turn:
Kapalbhati, Anulom vilom Pranayam, Omkar Pranayam, Bharmari, Pranayam, Body Roration, Shavasan, Suryanamaskar,Shavasan
2. Asans for Meditaion:

Padmasan, Swastikasan, Siddhasan, Bhadrasan, Vajrasan, Makarasan, Savasan

3. Asans to be performed in Standing Position: Trikonasan, Pervatasan, Utkatukasan, Hastpadsan

4. Asans to be performed while lying in Supine position:

Servangasan, Halasan, Savasan, Kosthavishramasan, Matshendrasan, Suptavajrasan

5. Asans to be performed while lying in Prone position:

Uttanpadasan, Uttanadhasan, Serpasan, Bhujasan, Salabhasan, Dhanurasan, Makarasan

6. Asans to be performed in sitting position:

Pavanmuktasan, Hastapadasan, Vajrasan, Ardhamatshyendrasan, Shishuasan, Saptamudrasan, Gomukhasan

7. Yoga Mudras (Seven Types):

8. Pranayam (Seven Types):

B.E./B.Tech SEMESTER – IV (IT)
IT 403 MICROPROCESSOR ARCH.,PROGRAMMING AND INTERFACING

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

MICROPROCESSOR:

[A] INTRODUCTION :
Microprocessor architecture & its operation, Memory,Input/Output, Microcomputer system,Interfacing devices.

[B] 8085 MICROCOMPUTER ARCHITECURE & MEMORY INTERFACING :
Block diagram, Address, Data, Control Bus, Generating control signals, Memory Map, Memory Interfacing.

[C] INTERFECING I/O DEVICES :
Basic interfacing concepts, interfacing Input/Output devices, emory mapped I/O.

[D] 8085 INSTRUCTIONS SET :
The 8085 programming Model, Addressing Models, Data Format, Instruction classifications - Data transfer, Arithmetic, Logic, Branch perations, Assembly language program, Debugging.

[E] PROGRAMMING TECHNIQUES :
Looping, counting, Indexing, Counters & time delay. Stack & sub-routines, Code conversion, arithmetic operations.

[F] BASIC INTERFACING TECHNIQUES :
Interfacing memory, Interrupt processing, programming and interfacing of VLSI based peripheral
Devices like 8253, 8251, 8255, 8259, 8279, 8257 etc., interfacing ADC/DAC.

MICROCONTROLLER:

[A] Basic concepts of Microcontroller and review of 8051 Architecture

Text Book:
(1) Architecture, Programming & applications with 8085/8080A By: R. S. Gaonker 4th ed.
(2) The 8051 Microcontroller by Kenneth J. Ayala

For Laboratory:
(1) 8080A-8085 Assembly language programming
By: Lance A. Leventhal

B.E./B.Tech SEMESTER – IV (IT)
IT 402 COMPUTER ORGANISATION

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. COMPUTING AND COMPUTERS
1.1 The nature of computing
1.2 The evolution of computers
1.3 The VLSI   Era

2. DESIGN METHODOLOGY
2.1 The system design
2.2 Register level
2.3 The processor level

3. PROCESSOR BASICS
3.1 CPU organization
3.2 Data representation
3.3 Instruction sets

4. DATAPATH DESIGN
4.1 Fixed point arithmetic
4.2 Arithmetic logic units
4.3 Advanced topics

5. CONTROL DESIGN
5.1 Basic concepts
5.2 Micro programmed   control
5.3 Pipeline control

6. MEMORY ORGANISATION
6.1 Memory technology
6.2 Memory systems
6.3 Caches

7. SYSTEM ORGANISATION
7.1 Communication methods
7.2 IO and system control
7.3 Parallel Processing

TEXT BOOKS:
(1)"COMPUTER ARCHITECTURE AND ORGANISATION" 3rd edition
JOHN .P. HAYES, Computer science series , McGRAW-HILL

REFERENCE BOOKS:
(1) "COMPUTER   SYSTEM   ARCHITECTURE ", MORRIS MANO, PHI. (2) "COMPUTER
ORGANISATION " 3rd edition, HMACHER,

VRANESIC and ZAKY., Computer Science Series, McGRAW- HILL

B.E./B.Tech SEMESTER – IV (IT)
IT 405 COMMUNICATION SYSTEM
SYLLABUS & SCHEME

w.e.f Dec 2010

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1 INTRODUCTION
1.1 Communication System
1.2 Analog and Digital Messages
1.3 Signal-to-Noise Ratio, Channel Bandwidth, and the Rate of Communication
1.4 Modulation
1.5 Randomness, Redundancy, and Coding

2 INTRODUCTION TO SIGNALS
2.1 Size of a Signal
2.2 Classification of Signals
2.3 Some Useful Signal Operations
2.4 Unit Impulse Function
2.8 Trigonometric Fourier Series
2.9 Exponential Fourier Series

3 ANALYSIS AND TRANSMISSION OF SIGNALS
3.1 A periodic Signal Representation by Fourier Integral
3.2 Transforms of Some Useful Functions
3.3 Some Properties of the Fourier Transform
3.4 Signal Transmission through a Linear System
3.5 Ideal and Practical Filters
3.6 Signal Distortion over a Communication Channel
3.7 Signal Energy and Energy Spectral Density
3.8 Signal Power and Power Spectral Density
3.9 Numerical Computation of Fourier Transform: The DFT

4 AMPLITUDE (LINEAR) MODULATION
4.1 Base band and Carrier Communication
4.2 Amplitude Modulation: Double Sideband (DSB)
4.3 Amplitude Modulation (AM)
4.4 Quadrature Amplitude Modulation (QAM)
4.5 Amplitude Modulation: Single Sideband (SSB)
4.6 Amplitude Modulation: Vestigial Sideband (VSB)
4.7 Carrier Acquisition

5. ANGLE (EXPONENTIAL) MODULATION
5.1 Concept of Instantaneous Frequency
5.2 Bandwidth of Angle-Modulated Waves
5.3 Generation of FM Waves
5.4 Demodulation of FM
5.5 Interference in Angle-Modulated Systems
5.6 FM Receiver

6   SAMPLING AND PULSE CODE MODULATION

6.1 Sampling Theorem

6.2 Pulse-Code Modulation (PCM)

6.3 Differential Pulse Code Modulation (DPCM)

6.4 Delta Modulation

7   PRINCIPLES OF DIGITAL DATA TRANSMISSION

7.1 A Digital Communication System

7.2 Line Coding

7.3 Pulse Shaping

7.4 Scrambling

7.5 Regenerative Repeater

7.6 Detection-Error Probability

7.7 M-ary Communication

7.8 Digital Carrier Systems

7.9 Digital Multiplexing

Text Book:

(1)Modern Digital & Analog Communication Systems (ThirdEdition) By : B. P. Lathi
Publication : OXFORD

Ref. Book:

(1) Digital Communications
By: Banard Sklar(Pearson education edition)

(2) Communication System
By: Bruce Carlson(Tata McGraw Hill)

B.E./B.Tech SEMESTER – V (IT)
CT 506 DESIGN & ANALYSIS OF ALGO.

SYLLABUS & SCHEME   w.e.f JULY 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

- . Introduction to algorithms
- . Elementary Data Structures
- . Methods for solving recurrence relations For finding time complexity
- . Overview of searching & sorting techniques
- . The Greedy Methodology
- . Dynamic Programming
- . Graph Traversal & Searching
- . Backtracking Techniques
- . Branch & Bound Techniques
- . Lower bound theory
- . NP-hard & NP-complete problems

Text Book:
(1) Fundamentals of Computer Algorithms by Horowitz, Sahni, Galgotia Pub. 2001 ed.
Ref. Book:
(1) Fundamentals of Algorithms by Brassard & Brately, PHI. (2) Introduction to Algorithms by Coreman, Tata McGraw Hill. (3) Design & Analysis of Computer Algorithms, Aho, Ullman,
Addision Wesley.
(4) The art of Computer Programming Vol.I & III, Kunth, Addision
Wesley.

B.E./B.Tech SEMESTER – V (IT)
IT 507 INDUSTRIAL INSTRUMENTATION

SYLLABUS & SCHEME   w.e.f DEC. 2010

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

(A)   INSTRUMENTATION FUNDAMENTALS:

Basic concepts of measurement, Fundamental elements of measurement system, Applications of instrumentation systems, Classification of Instruments, Standards & calibration, Errors & Uncertainties in performance parameters, Static performance parameters, Impedance loading & matching, Selection of the instrument, Formulation of system equations, Dynamic response.

(B)   MECHANICAL & INDUSTRIAL MEASUREMENT TECHNIQUES:
1. Sensors for transducer (Potentiometers, Strain gauge, Piezoelectric sensor, Sensors for Time & frequency measurement, Introduction to micro sensors).
2. Force & Torque measurement (Load cell, Elastic force devices, Torque cell, Torque cell data transmission)
3. Displacement,   Velocity,   Acceleration   measurement (Displacement measurement with Resistance, Potentiometer, Photoelectric displacement transducer, Microswitch   position   sensors, Linear velocity measurement, Angular velocity measurement, Seismic transducer theory)

(C) SIGNAL AND NOISE IN MEASUREMENT SYSTEM:

1. Introduction: Deterministic and random signal
2. Statistical representation of random signal: Probability density, Power spectral density, and Auto correlation functions.
3. Effects of noise and interference on measurement circuits
4. Noise sources and coupling mechanism
5. Methods of reducing effects of noise and interference.

(D) PRESSURE MEASUREMENT:

Manometers, Elastic type – Bourdon tube, diaphragm, bellows elements, Bell gauges, Vacuum gauges,differential pressure transmitter.

(E) FLOW MEASUREMENT:
Theory of flow system, Orifice calculations and installation, Venturi tube, Pilot tube, Flow nozzle. Variable Area meters-rotameter, Velocity meters, Electromagnetic flow meter, turbine flow meters, Ultrasonic flow meters, Vortex flow, Anemometers,

(F) LEVEL MEASUREMENT:
Theory of level measurement, Float gauges, Differential pressure type level measurement technique, Level measurement by weighing, bubbler technique, thermal effect type, Capacitance type, Ultrasonic and radiation type level measurement techniques

(G) TEMPERATURE MEASUREMENT:

Resistance Thermometers RTD, Thermister, Thermo electric temperature measurement technique Thermocouples and thermopiles Radiation thermometers optical and electrical pyrometers

(H) IR SENSORS , OPTOELECTRONICS SENSORS, SMART SENSORS, WIRELESS SENSORS & SENSOR NETWORKS

Classification, Photoconductive, Photovoltaic & Photo-emissive sensors with applications. Liquid Crystal Display device, Smart Sensors, wireless sensors & sensor networks

Text book:

1) Instrumentation by Kirk and Rimboi
2) Mechanical and Industrial Measurement, Latest Edition, By R.K.Jain
3) Industrial Instrumentation – D.P. Eckman.
4) Electronic Devices & Circuits – An Introduction by Mottershed

Reference book:

1) Instrumentation, Measurement and Analysis – Nakra – Chaudhary.
2) Mechanical And Industrial Measurements – R.K. Jain.
3) Industrial Instrumentation – A.E. Fribance.
4) Instrumentation Devices and Systems, Second Edition, Rangan, Sarma and Mani
5) Principles of industrial instrumentation – Patranabis

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

Major Topics:
Sets, propositions, permutations, combinations, discrete obabilities, relations, functions, graphs, trees and cut-sets, Finite-state machines, analysis of algorithms, omputability and Formal languages, recurrence relations, generating functions, discrete numerical functions, group, rings, lattices and Boolean algebras.

Course contents:
1.   Sets and propositions: combination, finite, uncountable infinite and infinite sets, mathematical
induction,   principles of inclusion and exclusion, propositions.
2.   Permutations, combinations, discrete probabilities: rules ofsums and products, permutations,
combinations, generation, discrete probability, conditional probability, information.
3.   Relations and functions: relational model of data bases, properties of binary relations,
 equivalence relation, partitions, partial ordering, lattices, chains and antichains, functions and pigeon-hole principle.
Graphs: Basic terminology, multi- and weighted graphs, paths, circuits, shortest path, Eulerian path, Travelling Salesman problem, factors of a graph, planar graphs.
5.   Trees: trees, rooted trees, path length, prefix codes, binary
search trees, spanning trees and cut-sets, minimum spanning trees, transport networks.
Finite-state machines: FSM as models of physical systems, equivalent machines, FSM as language recognizer.
Analysis of algorithms: time complexity of algorithms,example of shortest path algorithm, complexity, tractable and non-tractable problems.
        Computability and Formal languages: Russel's paradox and non- computability, ordered sets, languages, phrase structured grammars, types of grammars and languages.
Recurrence relations: linear recurrence relations with constant coefficient, homogeneous, particular and totaLsolutions,   generating functions, sorting
        algorithms,   matrix multiplication.
.   Discrete numerical functions: manipulations of numerica functions, asymptotic behavior, generating functions, combinatorial problems.
..   Group: groups and sub-groups, generators, evaluation of powers, cossets, Lagrange's theorem, permutation group and Burnsides theorem, group codes, isomorphism, automorphism, homomorphism, normal subgroups, rings, integral domains and fields, ring homomorphism, polynomial rings and cyclic codes.
2.   Lattices and Boolean algebras: Lattices and algebraicsystems,   principle   of   duality, properties of algebraic systems, distributive lattices, Boolean algebras, uniqueness, Boolean functions and expressions, propositional calculus.

Laboratory work:

The students will design, implement in a programming language like C, PASCAL or PROLOG and test various algorithms based on the concepts as above.

Text Book:

"Elements of Discrete Mathematics"   C.L. Liu, 2nd Ed. McGraw-Hill

Reference Books:

(1) "Modern Applied Algebra" Birkoff and Bartee, McGraw-Hill, CBS.
(2) "Discrete Mathematics - A UnifiedApproach" Stephen A. Wiitala.
   Computer Science Series, McGraw-Hill.

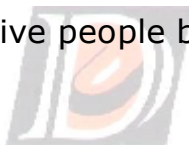| Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
2	--	--	2	0	**2**

Major Topics:
" Paradigm Shift
" Production / Production-Capability balance
" Principles of Pro-activity
" Mission Statement
" Principles of Personal Management
" Paradigms of inter-dependence
" Concept of win-win
" Concept of empathic listening
" Synergy
" Renewal

CREATIVITY:
" Ways to develop it, Importance of intuition and art of doing nothing for creativity, Creativity in Interrelationship
" Importance of Witness fullness
" Assumption v/s Self experience
" Child-Adult-Parent Balance of trails in Individual
" Responsive Communication: Discussion v/s Argument
" Concept of Character and its importance in life
" Success v/s worthwhile ness, Importance of failure
" Competition and Co-operation

References: 7 Habits of highly effective people by Stephen Covery

SYLLABUS & SCHEME   w.e.f Dec 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1 Basic Concepts:

Purpose of database system, View of data, Database abstraction and Models, Database Languages, Transaction management, Storage management, Database administrator, Database users, Overall system structure.

2 Entity Relationship Model:

Entity sets, Relationship sets, Attributes, Constraints, Keys, Entity relationship diagrams, Weak entity sets, Generalization, Specialization, Aggregation, Design of an E-Rdatabase schema, Reduction of an E-R schema to tables.

3 Relational Database Management System:

3.1 Relational Model

Structure of database, Relational algebra, Extended relational algebra operation, tuple relational calculus, Domain relational calculus, Modification of database, Views.

3.2 Structured Query Language

Background, Basic structure

3.3 Integrity Constraints

Domain constraints, Referential integrity, assertions, Triggers, Functional Dependencies.

3.4 Database Design

Pitfalls in relational database design, decomposition, Normalization, I,II,III normal Forms,

Normalization using functional dependencies, Normalization using multi valued dependencies, Domain key normal form, Alternative approach to database design.

4 File System Structure:

Indexing & Hashing, File organization, Organization of records in files, Data dictionary storage, Basic concepts of indexing, Order indices, B- Tree index files, B+ -Tree index files, Static hashing

& Dynamic Hashing.

5 Query Processing:

Overview, Catalog information for cost estimation, Measures of query cost, Selection operation, Sorting, Join operation, Other operations, Choice of evaluation plans.

6 Transaction Processing:

Transaction concepts, Transaction state, Implementation of atomicity & durability, Concurrent executions, Serializability, Conflict serializability, View serializability, Testing of conflict and view serializability.

7 Concurrency Control:

Lock based protocols, Time-stamp based protocol, Validation based protocol, Multiple granularity, Multi-version schemes, Deadlock handling, Insert & delete operations, Concurrency in   index structures.

8   Recovery System:

Failure classification, Storage structure, Recovery &   Atomicity, Log-based recovery, Shadow paging, Recovery with concurrent transactions, Buffer management, Failure with loss of non- volatile storage, Advance recovery techniques.

9   Distributed Data Bases

10   Security and Integrity of data base

Text Book:

(1) "Data Base System Concepts"
Henry F.Korth and A.Silberschatz. 2nd Ed. McGraw-Hill 1991.

B.E./B.Tech SEMESTER – V (IT)
IT 505 COMPUTER AND COMMUNICATION NETWORK

SYLLABUS & SCHEME   w.e.f JULY 2011

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. Introduction:
Uses of computer Networks, Network Hardware-LAN,MAN, WAN, internetworks. Network Software – Design
Issues, interfaces & Services, Connection Oriented & Connectionless services. Service primitives. Relationship of services to protocols.Reference Models - OSI & TCP/IP, their comparison & critiques.

2. The Physical Layer:
Transmission Media – magnetic media, twisted pair, baseband & broadband, fiber optics. Wireless Transmission
- radio, microwave, infrared & light wave. Narrowband ISDN, Broadband ISDN & ATM.

3. The Data Link Layer:
DLL Design issues, Error Detection & Correction. Elementary Data link Protocols - Utopia, Stop N Wait and
Automatic Repeat Request. Sliding Window Protocols - 1 bit sliding window, Go Back N, Selective Repeat
Protocols. Examples of Data link layer protocols HDLC , PPP

4. Medium Access Sub layer:
Channel Allocation Problem - Static & Dynamic. Multiple Access protocols - ALOHA, CSMA, Collision Free
Protocols, Limited contention protocols, WDMA protocol, wireless LAN protocols. IEEE-
802.3(Ethernet),802.4(Token Bus) ,802.5(Token Ring) and FDDI
Bridges - From 802.x to 802.y, transparent Bridges, Spanning Tree, Source Routing Bridges, remote bridge
.Introduction of Repeaters ,Hub ,bridges, switches, routers and gateways.

5. The Network Layer:
Network layer Design issues. Routing Algorithms. Congestion Control Algorithms - general policies, congestion
prevention policies, traffic shaping, flow specifications, congestion control in VC subnets, Congestion controls in Data gram Subnets, load shedding, jitter control. Quality of services-requirements, techniques to achieving good quality of services-Leaky bucket algorithm. Token bucket algorithm, resource reservation, admission control, packet scheduling.
Internetworking-How networks differ, how networks can be connected, concatenated virtual circuits
,connectionless internetworking ,tunneling, internetwork routing, fragmentation
The network layer in the internet - the IP protocol, IP addresses & subnets, Internet Control Protocols – ARP,RARP,OSPF & BGP

6. The Transport Layer:

The Transport Service-services provided to upper layers, transport services primitives, Elements of Transport Protocols, The Internet Transport Protocols - TCP service model, TCP protocol, TCP Segment Header, TCP Connection Management, TCP Transmission Policy, TCP Congestion Policy. UDP & overview of Socket.

7. The Application Layer:

Application Layer Protocols
- File transfer protocol
- Domain Name System
- SMTP
- HTTP

8.   Security & Performance Issues in Computer Networks

- Data Encryption, Public Key Cryptography, Trusted System, Firewall, Network Performance measurement, Network baseline, Network Management & Documentations

Text Book:

1) Computer Networks - Andrew S. Tanenbaum, 4th Edition. Prentice-Hall of India(PHI).

Reference:

1) Data Communications and Networking by Behrouz A. Forouzan
2) Data & Computer Communications - William Stallings, 2ed, Maxell Macmillan Int.
3) Communication Networks, Fundamental Concepts & key Architectures - Leon-Garcia & Widjaja, Tata- McGraw Hill Edition.

B.E./B.Tech SEMESTER – V (IT)
IT 506 ADVANCE MICROPROCESSOR ARCHITECTURE

SYLLABUS & SCHEME   w.e.f JULY 2008

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

[A] 8086 Family Processor Architecture including 80286 /80386 /80486 /Pentium. 8086 family Microprocessor overview Introduction to programming the 8086

[B] 8086 family Assemly language programming

[C] Strings, Procedures and Macros

[D] 8086 Instruction Descriptions and Assembler Directives [E] 8086 system timing and interfacing memory and I/Os [F] 8086 interrupts

[G] Writing programs which contain C and assembly language

[F] Multi user/multitasking operating system concepts,

Introduction to 80286/80386/80486/Pentium processors,Real Address Mode and Protected Virtual Address

Mode of 80286 /80386 /80486 /Pentium processors.

[G] Instruction level parallel processing

- Pipelining of processing elements
- Delays in pipeline execution
- Difficulties in pipelining
- Superscalar processors
- Very Long Instruction Word (VLIW) Processor
- Multithreaded Processors

Text Book:
(1) Microprocessors & Interfacing - Programming and Interfacing By: Dogulas v. Hall
(2) Notes from INTEL
(3) Parallel Computers – Architecture and Programming By V. Rajaraman and C. Shiv Ram Murthy

Reference Book:
(1) Programming The 80286, 80386, 80486 and Pentium-based personal Computer by Barry B. Brey
(2) BY V.RAJARAMAN AND C.SIVA RAM MURTHY1. "Parellel Processing", Learning Material Series,
Indian Society for Technical Education, New Delhi, 1996.

IT 608 LANGUAGE TRANSLATOR

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. Language translation overview:
Phases in language translation, overview of system software used during translation – language
processors, linker , loader. Types of language processors –assembler, interpreter ,compiler etc.

2. Compiler structure:
Analysis-synthesis model of compilation, various phases of a compiler.

3. Lexical analysis:
Interface with input, parser and symbol table, token, lexeme and patterns. Difficulties in lexical
analysis. Error reporting. Implementation. Regular definition, Transition diagrams

4. Syntax analysis:
4.1 CFGs, ambiguity, associativity, precedence,
4.2 Top down parsing-recursive descent parsing, transformation on the grammars, predictive parsing
4.3 Bottom up parsing, operator precedence grammars, LR
parsers (SLR, LR)

5. Syntax directed translation:
Inherited and synthesized attributes, L- and S-attributed definitions, semantic stacks in bottom- up compilation, action symbols in top-down

6. Intermediate Code generation:
Intermediate languages, Issues in implementation.

7. Run time system:
storage organization, activation tree, activation record, parameter passing, symbol table, static, dynamic and heap storage allocation, garbage collection.

8. Symbol table management:
Symbol table organizations for blocked and non-blocked languages.

9. Code optimizations:
Machine dependent, machine independent optimizations

10. Error Detection and recovery

Text Books:
(1) The theory and practice of Compiler Writing by Jean Paul
Tremblay and Paul G. Sorenson
(2) Compilers: Principles, Techniques and Tools, By A. V. Aho, R. Sethi, and J. D. Ullman.
Publisher Addison-Wesley.

Ref. Book:
(1) Compiler design in C by Allen Holup, Publisher-PHI
(2) Compiler Construction by   Dhamdhere, Publisher- McMillan India

CT 614 THEORY OF AUTO. & FORMAL LANGUAGES

SYLLABUS & SCHEME   w.e.f DEC 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	0	4	0	**4**

Major Topics:
Formal languages, Automata, Computability, introduction to computational complexity, NP-completeness.

Course contents:
1.   Review of Mathematical background:
Sets, functions, logical statements, proofs, relations, languages, Mathematical induction, strong

principle, Recursive definitions.

2.   Regular Languages and Finite Automata:
Regular expressions, regular languages, applications, Finite automata, memory requirement in a
recognizer, definition, representation, extended notation, string recognition,   union, intersection and complement of regular languages. Non-deterministic finite automata, lambda transitions,   equivalence,   algorithms, examples. Kleen's theorem. Minimization OF Finite automata.

Non-regular and regular languages, criterion, Pumping Lemma, decision problems and decision algorithms, Regular languages in relation to programming languages.

3.   Context-Free Languages and Push-Down Automata:
Context-free languages, definition, union, concatenation,examples etc. derivation tree and
ambiguity.
Simplified and Normal forms, Chomsky normal form.
Push-Down Automata, definition, examples, deterministic PDA, two types of acceptances and their equivalence.
Equivalence of CFG and PDA.
Introduction to parsing, top-down and bottom-up parsing.
Non-CFL and CFL, Pumping Lemma for CFL, intersection and complement.

4.   Turing Machines:
Models of computation, TM definition, combining TMs, computing a function with TMs. variations on Turing Machines, double infinite and more than one Tapes, non-deterministic and Universal TM, Recursively Enumerable languages, Unrestricted and context-sensitive grammars and their relation to TM, Linear Bounded Automata, Chomsky hierarchy, Unsolvable   problems, Halting problem, Post's correspondence, applications to CFLs. Computability, Primitive recursive functions, computable functions, PR functions, bounded operations.
Non-primitive recursive functions.

5.   Introduction to Computational complexity:

Tractable problems, growth rate, time complexity of TM. NP-completeness.

Text Book:

"Introduction to Languages and Theory of Computation" by John C. Martin   McGraw-Hill 1991.

Reference Books:

"Computation : Finite and Infinite"
By Marvin L. Minsky, Prentice-Hall, 1967

B.E./B.Tech SEMESTER – VI (IT)
IT 602 DIGITAL SWITCHING SYSTEM (ELECTIVE-I)
SYLLABUS & SCHEME w.e.f.July 2006

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

.   Selector switching and dials.
.   Switching principle of step by step stronger system.
.   Telephone relays.
.   Subscriber's telephone set and it's working.
.   Hunting and selecting circuits.
.   Traffic and trucking.
.   Digital switches.
.   The cellular concept - system design fundamentals.
.   Mobile radio propagation: Large-scale path loss.
.   Mobile radio propagation: Small-scale fading and multipath.
.   Modulation techniques for mobile radio.
.   Speech coding.
.   Wireless systems and standards (GSM system).

Text Books:
(1) Automatic Telephony by P. N. Das, Pub.: D. C. Bose, Modern Book agency Pvt. Ltd.
(2)   Digital Telephony by John C.Bellamy, Pub.: John Wiley & Sons. (3)   Wireless Communications Principles and Practice by Theodore
S. Rappaport, Pub. :Prentice Hall PTR.

B.E./B.Tech SEMESTER – VI (IT)
IT 616 CORE JAVA TECHNOLOGY (ELECTIVE-I)

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. Introduction to Java
2. Primitive Data Types
3. Control Structures
4. Methods
5. Programming with Objects and Classes
6. Class Inheritance
7. Array and String
8. Getting Started with Graphic Programming
9. Creating User Interface
10. Applets and Advanced Graphics
11. Exception Handling
12. Multithreading
13. Input and Output
14. Network Programming

Text Book:

"An Introduction to JAVA programming" By: Y. Daniel Liang Publisher: PHI

Reference Book:

"The Complete Reference Java 2" By: Herbert Schildt
5th edition Publisher: Tata McGraw-Hill

B.E./B.Tech SEMESTER – VI (IT)
IT 607 APPLIED OPERATING SYSTEMS

SYLLABUS & SCHEME   w.e.f july 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1   Introduction
Role of an OS computer system, types of operating system.
2   Operating system structures
System documents, OS services, system calls, system structure, concept of virtual machines.
3   Process management
Process concept, process scheduling, co operating processes, Inter process communication.
4   CPU scheduling
Basic concept, scheduling criteria, scheduling algorithms.
5   Process synchronization
Critical section problem, synchronization hardware,semaphores, classical problems of
synchronization, critical regions, monitors.
6   Deadlocks
Deadlock characteristics, methods for handling deadlocks,deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlocks, combined approach for deadlock handling.
7   Memory Management
Logical versus Physical Address space, Swapping, Contiguous Allocation, Paging,
Segmentation, Segmentation with Paging
8   Virtual Memory
Demand Paging, Performance of Demand Paging, Page Replacement, Page-replacement
algorithms, Allocation of frames, Thrashing, Other Considerations, Demand segmentation
9   File-System Interface
File concept, Access methods, Directory Structure, Protection, Consistency
10   File-System Implementation
File-System Structure, allocation methods, Free-space Management, Directory
Implementation, Efficiency and performance
11   I/O subsystems
I/O Hardware, Application I/O interface
12   Secondary-Storage Structure
Disk Structure, Disk scheduling, Disk Management, Swap-space management
13   Protection
Goals of protection, domain of protection, access matrix, implementation of access matrix, revocation of access rights, capability based systems, languages based protection.
14   Security
The problem, authentication, one-time password program   threats, system threats, threat monitoring, encryption, computer security classification.
15. Case studies (UNIX, LINUX, Win NT)

Text Book:

(1)   Operating System Concept : Silbertschatz, Galvin, 5ed.
                                    Addison Wesley.

Reference books:
(1) Operating system Concepts : Milan Malinkovic, TMH, 2nd ed. (2) Operating System : William Stallings, PHI, 2nd ed.

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

Phases in Software Development Project Overview, Need, Coverage of topics Project
feasibility analysis
Software Process Models
Incremental Process Models Evolutionary Process Models Component based Development
Model Unified Process
Software Project management
Cost Estimation
Loc based estimation
FP- based Estimation
COCOMO II
Project Scheduling Timeline charts Earned value analysis Risk Management
Risk identification
Risk assessment & refinement
Risk mitigation , monitoring & management
RMMM plan
Change Management
Software configuration management
Software configuration process
2. Requirement engineering
Requirement engineering tasks
Initiating the requirement engineering Process
Eliciting requirements
System Engineering
System analysis: SRS , Use cases
3. System design
Design concepts and principles
Architectural design User interface design Component level design Object oriented design
4. Software Testing
Software Testing strategies Software Testing techniques White box testing
Basis path testing Control structure testing Black box testing
Object oriented testing
5. Software Quality Assurance
ISO CMM
6. Software reliability

Text Book:
Software Engineering - A practitioner's Approach by Roger S. Pressman, McGraw Hill Pub.

Reference Book:
(1) Fundamentals if software engineering by Rajib Mall, II ed.
Prentice Hall, Indian

(2) Software Engineering by Ian Sommerville, 6 ed., Pearson Edu. (3) UML Distilled : A brief guide to the standard object modeling language by Flower and Scott

(4) SOFTWARE ENGINEERING: Principles and Practice by Waman S Jawadekar, Tata Mcgraw hill

(5) Object-oriented Analysis and Design with Applications by Grady Booch; II ed., Pearson Edu.

(6) Object oriented Analysis and Design by Andrew Haigh, Tata McGraw-Hill

SYLLABUS & SCHEME   w.e.f DEC 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
2	2	2	4	1	**5**

1. Introduction .Net Platform Featuring of .Net Platform Components of the .Net Platform
2. Introduction to ASP.NET Creating ASP.NET application Managing Application State
   Using Applications Events during Http protocol request
   Configuring sessions
   Store & retrieves data using a cookie
   Pass user information between pages
3. Introduction C#.NET
   Developing application using C#.NET
   Partial class, Collection, Lists, Arrays, Strings, Events, Delegates, Threading, Exception handling, Networking, File I/O, Generic
4. Separate code from content with HTML controls
   Implement Post back Form
   Increase code separation with code-behind file
   Increase modularity with a user control
   Creating a subscription post back form with a user control
5. Working with Master Page in web application
   Building and consuming Xml Web services Transport protocols for Web services
   Overloading web methods
   Caching web services for responses
6. ASP.NET server controls
   Server side processing in ASP.NET Using HTML controls
   Using ASP.NET Standard controls (BulletedList, Multiview and   View, ImageMap, Wizard, Substitution, HiddenField, FileUpload)
   Using ASP.NET and Login Controls Using ASP.NET Validation controls Using ASP.NET Navigation controls
7. Data binding in ASP.NET using data source controls
   Using bound list controls with data source controls
   GridView**,** DetailView, FormView**,** DataList, DropDownList,   TreeView, Menu**,** Adrotator
8. Architecting & Configuring an ASP.NET application
   Configure an ASP.NET application
   Debugging and Error handling Techniques for ASP.NET application
   Common configuration settings like authentication, authorization, custom errors, connection strings
9. Data management with ADO.NET Basic ADO.NET features
   Using Connection, Command, DataReader, DataAdapter object   Using Parameters, DataSet and
   DataTable
   Display data from Database
   Usage of Web control to access database Customize data bound result using style sections
   Modify data with SQL statements

Manipulating data within ADO.NET
10.   Caching
Cache page output, cache object data
Cache user control
Web Designing and Testing
11.Packaging and Deploying Asp.net web application

Text Book :
1.   Professional ASP.NET 2.0
by Bill ebjen, Scott hanselman, Farhan muhammad, Srinivasa sivakumar, Devin rader,
Wrox Pub.
2.Complete Reference C#
by Herbert Schildt

Ref. Book :

1.	Beginning ASP.NET 2.0 with Visual C#.NET 2005
by Chris Hart, John Kauffman, David Sussman, and Chris Ullman
2.	Beginning ASP.NET 2.0 in C# 2005: From Novice to Professional by
Matthew MacDonald

SYLLABUS & SCHEME   w.e.f JULY 2008

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1 Introduction to Artificial Intelligence
Introduction problems, problem space, production systems, problem characteristics

2 Problem solving by Search
Uniformed search techniques (best-first search, Depth-First search), Heuristic search techniques (General and test, Hill climbing, Simulated anncalling, A* algorithm, Constraint satisfaction, Means-end-analysis) Adverserial search echniques (Game playing, MINIMAX algorithm, alpha- Beta pruning)

3 Knowledge Representation and Reasoning
Propositional Logic, predicate logic, Instance and is a relationship, representation in slot and filter systems: semantic net, frames, Conceptual dependency, scripts. Rule based system, procedure versus declarative knowledge, forward versus backward reasoning, unification, resolution, Knowledge representation in data processing & conventional database system, functional approach, Monotonic and Non-Monotonic logic, theory of dealing with uncertainty.

4 Fuzzy Logic
Definition, need fuzzy set, fuzzy operators, fuzzy control systems, limitations

5 Natural Language Processing
Introduction to NLP, NLU, phases of NLP(Morphological analysis, syntactic analysis, semantic analysis, discourse integration), introduction to Machine Translation.

6 Expert System
ES architectures, representation and use of domain knowledge,expert system shells, knowledge acquisition.

7 Knowledge representation in programming language : PROLOG
Facts and predicate, data types, goal finding, backtracking, simple object, compound objects, use of cut and fail predicates, recursion, lists, simple input/output, Static and dynamic database, arithmetic and string operations, file handling.

Text Books :
1. Artificial Intelligence by Elaine Rich and Kevin Knight, TMH
2. Introduction to Turbo PROLOG by Carl Townsend, BPB
3. Introduction to knowledge base systems by R.A. Frost

Ref. Books :
1. Artificial Intelligence : A Modern Approach by Stuart Russell and Peter Norvig, PHI
2. Artificial Intelligence and Expert System by D.W. Patterson, PHI
3. Introduction to Applied Fuzzy Logic by Ahmed Abraham, PHI
4. Charniak and Mcdermott.
               Introduction to Artificial Intelligence, Addison-Wesley, 1985.
5.   Essentials of Artificial Intelligence , Morgan Kaufmann, 1993.

6. Winston: Artificial Intelligence , 3rd Edition, Addison Wesley, 1992.
7. Artificial Intelligence: A Modern Approach Stuart Russell and Peter Norving Prentice Hall, 1995

B.E./B.Tech SEMESTER – VII (IT)
IT 715 DISTRIBUTED COMPUTING

SYLLABUS & SCHEME   w.e.f JULY 2008

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

Topics : TCP,UDP
Socket Programming on UNIX Socket Options
FIFO PIPE
Shared Memory
Semaphore
Fundamentals of Distributed Computing
Event Synchronization
Distributed Computing Paradigms
Distributed Objects
CORBA
Advanced Distributed Computing Paradigms
Value of SOA ,Characteristics of SOA
SOA Concepts (xml standards, Web Services
Service Design Principles, SOAP, WSDL & UDDI, Security) Basic SOA Architecture
[Services, BPEL, ESB, SOA Life Cycle, Open Standards] SOA Management
Preparing for SOA
Building SOA Applications
Grid Computing & Grid Services
Peer to Peer

Text Books:
(1) UNIX Network Programming by W. Richard Stevens, Prentice Hall   Publication
(2) Distributed Computing : Concepts & Applications : by M.L.Liu Addison Wiselly
(3) SOA in Practice: The Art of Distributed System Design by Nicolai M. Josuttis, Prentice Hall Publication

Reference Books:
(1)SOA: Principles of Service Design by Thomas Erl
(2)Distributed Operating Systems: Concepts and Design by Pradeep K. Sinha, PHI Publication
(3) Distributed Systems: Concepts and Design by George Coulouris, Jean   Dollimore and Tim Kindberg,

Addison-Wesley, 4 Ed.

B.E./B.Tech SEMESTER – VII (IT)
IT 707 SYSTEM DESIGN PRACTICE
SYLLABUS & SCHEME w.e.f. July 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
--	--	2	0	1	**1**

Students have to develop in-house mini project. This will help them to get prepare for their final semester project. They are supposed to prepare and submit a project report as a part of their term work.

They are to be examined based on viva and/or demonstration.

IT 704 DATA ANALYSIS AND INFORMATION EXTRACTION

SYLLABUS & SCHEME
w.e.f DEC 2003 (become compulsory from FEB'-2007)

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1. Introduction
An Overview of data warehousing and data mining

2. A Multi-dimensional data model
Multi-dimensional Data Cubes
Star, Star Flakes, & Fact Constellation Schema
Concept Hierarchies
OLAP

3. Data Warehouse Architecture
Steps for design and construction of data warehouse
A 3-tier data warehouse architecture
ROLAP, MOLAP, HOLAP.

4. Data Pre-Processing
Overview, Need for pre-processing
Issues related to efficient data handling (Extraction, Transformation, And updating of large databases (ADDED)
Data Cleaning
Data Integration & Transformation
Data Reduction
Discretization & Concept Hierarchy Generation

5. Data Warehouse Implementation
Efficient Computation of Data Cubes
Indexing OLAP Data
Efficient Processing of OLAP Queries
Metadata
Data warehouse Backend Tools & Utilities

6. Data mining Primitives, Language, & System Architecture
What defines a data mining task? A data mining Query Language Architecture of a Data mining System

7. Concept Description: Characterization & Comparison
An Overview
Data Generalization & Summarization-Based Characterization Analytical Characterization:
Analysis & Attribute Relevance Mining Class Comparisons
Mining Descriptive Statistical Measures
Concept Description & Its Mining

8. Mining Association Rules

Basic Concepts, Market Basket Analysis

Mining single-dimensional Boolean Association Rules from transactional database

Mining Multi-level Association Rules from transaction database

Mining multi-dimensional association rules from relational databases and data warehouses.

From Association Mining To correlation analysis

9. Classification & prediction

An Overview & Basic Concepts Classification by decision tree induction Bayesian Classification

Classification By Back Propagation

Classification Based on concepts from Association Rules Mining

Other methods, such as Genetic Algorithm, Fuzzy Set Approach, Case Based Reasoning, Etc. Prediction

Classifier Accuracy

10. Cluster Analysis

An Overview & Basic Concepts Partitioning methods Hierarchical methods
Density-Based methods
Grid-based methods
Model-based clustering methods
Outlier analysis

11. Mining Complex Types of Data

Mining Time Series & Sequence Data
Mining Text Databases.

2. Time series analysis Trend analysis Forecasting
Smoothing techniques
Cyclical variation
Seasonal variation
Uses of seasonal index
Irregular variation

Text Book:

1.   Jiawei Han & Micheline Kamber, "Data Mining – Concepts & Techniques", Morgan Kaufmann Publishers(Academic Press)(2001)

Reference Books:

1.   Data Warehousing in the Real World, Sam Ananory & Dennis Murray,   Addision-Wesley, (2000)
2.   W.B. Frakes & R. Baeza- Yates, Eds.. "Information Retrieval: Data Structures & Algorithms", Prentice- Hall, New Jersey, (1992).
3.   Michael J A Berry, & Gordon Linoff, "Data mining techniques: For Marketing, Sales, Customer Support"
4.   Pieter Adriaans, & Dolf Zantinge, "Data Mining", Pearson Education Asia (2001).
5.   Jit S. Chandan, "Statistics for Business & Economics", Vikas Publishing. (1999)

IT 710 E-COMMERCE & E-SECURITY (ELECTIVE-II)
SYLLABUS & SCHEME w.e.f.July 2005

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1   Introduction to E-Commerce
Introduction to E-Commerce, Transactions on E-Commerce, Requirements of Security on E-Commerce

2   E-Commerce Terminology, Framework, Payment Scheme etc.
Concept of terms related to commerce in general & E-commerce in particular Buyer seller market. Framework of B2B, B2C, C2C, E-Com models.

3   Security policy and security overview.

4.   Conventional Encryption Techniques
Introduction, Basic encryption techniques, simplified DES, block cipher mode of operation, traffic confidentiality and key distribution, Random Number Generation.

5.   Public Key Cryptography
RSA algorithm, Key management, Elliptic Curve Cryptography, Diffie-Hellman Key Exchange

6   Message Authentication and Hash Functions
Authentication requirement, Functions, Message Authentication
Code (MAC), Hash Functions(SHA-1), Digital signature standard DSS).

7.   Network Security
Authentication Protocols Like Kerberos, X.509 Directory Authentication Services.

8.   IP security E-Mail Security
IP security overview, architecture, authentication header, Encapsulation security payload, S/Mime, Web security, Firewall.

9.   Safe Electronic commerce
Secure transport protocol, secure E-payment protocol, secure electronic transaction.

Text Book :
1.   Cryptography and Network Principles and Practice by Wiliam Stallings, Pearson Edu. 2003
2.   Web Commerce Technology Handbook by Daniel Minoli and Emma Minoli, TMH (1999)

Ref. Book :
1.   E-commerce : Business, Technology, Society by Pearson Edu. Asia
2.   E-Commerce : A managerial Perspective by Samantha Shurety, P

B.E./B.Tech SEMESTER – VII (IT)
IT 708 INTRODUCTION TO NEURAL NETWORKS(ELECTIVE-II)

SYLLABUS & SCHEME   w.e.f JULY 2003

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

1   Introduction

Human brain and models of neuron, neural network architecture, Knowledge representation, artificial intelligence and neural network.

2   Learning process

Introduction to machine learning, error correction, memory based learning, Hebbien learning,
competitive learning, Boltzmann, learning, self learning, memory and adoption, statistical learning theory.

3   Single Layer perception

Introduction adaptive filtering problem, unconstrained ptimization   techniques, perception,
perception convergence theorem, relation between perception and Bays classifier for a Gaussian environment.

4   Multilayer perception

Back propagation algorithm, output representations and   decision rule, feature detection, back propagation and differentiation, Hessien matrix, accelerated convergence of back propagation learning, supervised learning, convolutional networks.

5   Radial Basis function networks

Cover's theorem and separability of patterns, interpolation problem, regularization networks, radial basis function (RBF) networks, comparison of RBF network and multi layer perception.

6   Support vector machine

Optimal hyper plane linear separability patterns, optimal hyper plane for non separable patterns, support vector machine for pattern recognition, e-insensitive loss function, support vector machine for nonlinear regression

7   Self organization maps

Two basic feature-mapping models, self organization Map(SOM), SOM algorithms, linear vector quantization, hierarchical vector quantization.

8   Stochastic machines

Statistical mechanics, Markov chain, metropolis algorithm, simulated annealing, Gibbs sampling, Boltzmann machine, sigmoid belief networks, deterministic machines.

9   Neural network applications

Signature recognition, voice recognition, netALk etc.

Text Book :

1   Neural Network by Simon Haykin, Pearson Edu., IInd edition

Ref Book : Nil

B.E./B.Tech SEMESTER – VII (IT)
IT 713 ADVANCED JAVA TECHNOLOGY
SYLLABUS & SCHEME   w.e.f JULY 2007

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
4	--	2	4	1	**5**

Prerequisites:
- Java language
- GUI programming: Application and Applet
- Threading Concepts
- Networking Concepts
- File Handling: Input and output
- Exception Handling
- Database concepts

1) Networking and concurrency mechanism
- Multithreading
- Sockets
- Service
- Handling Connection with remote site
- Echo server-client
- E-Mail sender

2) JDBC
- JDBC versus ODBC, JDBC driver types, JDBC URL, Drivers
- Two tier versus three tier models
- API: DriverManager, Driver, Connection, Statement, ResultSet
- Operations: Insert, Update, Delete, Create, Select
- Mapping of SQL data types with Java data types
- Scrollable Result Set: Record navigation operations
- Updatable Result Set: Insert, Update, Delete
- Callable Statement, Prepared Statement
- Transaction and Save point mechanism
- Enterprise JDBC (Support from Container): Enterprise Resource, DataSource, Connection pooling, JNDI

3) Servlets
- Introduction and use of Application server (Sun AS and Apache Tomcat).
- Web application structure (.war), Deployment Descriptor, packaging, development and deployment
- Servlet Life Cycle
- Javax.servlet, Javax.servlet.http packages
- Request, Response concepts and operations
- Variable Scopes: application, session, request
- Parameters: Context, Init
- Session Management and Cookies (HttpSession and Cookie objects)
- Handling HTTP requests and responses, Handling GET/POST requests
- Request Dispather
- Status codes, errors, Response headers

4) Remote Objects- Remote Method Invocation
- RMI concept
- Stubs and Marshalling
- Interfaces and IDL
- IDL compiler - rmic

- Naming, lookup, RMI registry and client server program deployment
- Introduction and use of RMI security manager, policy files, Downloading of RMI stub files, Distributed
Garbage Collection, Remote Callbacks

5) JNI – Java Native Methods

- JNI concept
- Use of javah
- Using c functions from java code, generation of library (DLL), and its loading
- Development Steps for JNI based program on Windows and Linux

6) Java Beans

- Bean Properties, Introspection
- Using JavaBean in Servlet and JSP: useBean, setter, getter
- MVC architecture, Data Access Object
-

7) Enterprise Java Beans 2.x(Session, Entity)
- What is EJB, EJB architecture, Bean type
- Component and Container architecture
- Javax.ejb package: Remote and local interfaces and bean class: Home, Object and bean class
- EJB structure(ejb.jar), packaging, development, deployment
- Life cycle of Session(stateless and stateful) and entity(CMP and BMP) beans
- Session bean(stateful and stateless) development and client development
- Entity bean(CMP and BMP) development and client development: finder methods, getter/setter methods, EJB-QL, primarykey, etc.

8) Java Server Pages
- Syntax and semantics of: Standard action, expression, processing elements, Comments, scriptlets
- JSP life-cycle, and Phases of JSP life-cycle
- Collection and map management
- EL expressions
- JSTL
  i. Introduction to JSTL concepts: taglib, uri, tld
ii. Core: set, out, redirect, url, import, param, control structures: if, forEach, forToken, choose, array, collection and map management
iii. Databse: setDataSource, query, update, param, transaction
- Custom tag Development
  i. Tag library structure
  ii. Tag interface hierarchy
  iii. Life cycle of SimpleTag, IterationTag and BodyTag.
iv. Tag development using SimpleTag, IterationTag and BodyTag. Tag attributes, body handling and manipulation,
  v. Introduction to tag files.

Text Book : 1.J2EE Complete Reference

By : Keogh, James
Publication : McGraw-Hill

2.Core Java2, VOL-II, Advanced Features, Edition Vth
By : Cay Horstmann, Gary, Cornell
Publication : Sun Micro System

B.E./B.Tech SEMESTER – VIII (IT)
AF 801 PROJECT/INDUSTRIAL TRAINING

SYLLABUS & SCHEME   w.e.f DEC 2004

Teaching Scheme			Credit Structure		Total
LEC.	TUT.	PRAC.	L+T	P	
--	--	--	18	--	**18**

Each students has to give two seminar on project/ given topic during their project duration.

The students will undertake project work for the period of full semester. They should design/develop the hardware and/or software system. They may also undertake project involving study and analysis of hardware and system in the organization.

They are supposed to prepare and submit a project report as a part of their term work and give seminars on their project work. The students may be sent to the industry/organization for their project and they are to timely report to the Institute regarding monitoring and necessary guidance. The faculties should arrange visits at the places of projects.

They should arrange for demonstration of the project work, if any. They are to be examined based on viva and/or demonstration.

The main purpose of industrial training is to acquaint students with the administrative and organizational details of a company. They should know what are the basic rules followed in a company and how a employee should behave and work in the company.