Course Code: **IT801**
Title of the Course: **Compiler Design**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
4	1	0	5	4	3	10	10	80	100

Unit	Contents	Hours
I	**Lexical Analyzer:** Basic functions of language translator, difference between compiler and interpreter, boot strapping, logical phases of a compiler, difference between a pass and a phase. Lexical analysis, reasons for separating lexical analysis from syntax analysis, finite automate and state diagram, scanning algorithm, regular expressions, LEX program to perform Lexical analysis of high level languages.	9
II	**Syntax Analyzer:** Type grammars, parse tree, ambiguity in writing grammars, methods to remove ambiguity, methods of parsing, top down and bottom-up concepts, top-Down parsing problems and solutions, recursive descent parsing, LL(1) grammars, error handling, bottom-up methods, operator precedence, simple precedence operator grammar, parsing of LR(k) and LALR(k) grammars, error handling	9
III	**Semantic analyzer and Symbol table:** Semantic analysis, typical semantic errors, type checking, type conversion, specification of a simple type checker, system directed translation, syntax directed definitions, construction of syntax trees, bottom-up evaluation of s-attributed definitions, L-attributed definitions, top-down translation, bottom-up evaluation of inherited attributes. storage allocations, strategies of storage allocation, static, dynamic tables, organization, data structures for symbol table, trees, arrays, linked lists, hash tables, factors.	9
IV	**Intermediate generation:** Intermediate code forms, polish notation, quadruples, triples, indirect triples, trees, abstract machine code, transformation into internal forms, semantic routines, translation grammars, code generation, machine dependent and machine independent code generation, peephole optimization, folding, elimination of redundant operations, loop optimization, frequency reduction, strength reduction, global flow analysis.	9
V	**code optimization and code generation:** Principle sources Of Optimization, optimization of basic blocks, Introduction, Loops in flow graphs, Loops in flow graphs, Optimizing transformations: compile time evaluation, Common sub-expression elimination, variable propagation, code movement, strength reduction, dead code elimination and loop optimization, Local optimization, DAG based local optimization. Global Optimization: Control and data flow analysis, Code generation, forms of object code, machine dependent code optimization, register allocation for temporary and user defined variables	9
Total		45

Text books:

1. Ullman ± ³3ULQFLSOHV RI FRPSLOHU GHVLJQ__ 1DURVD_
2. O.G.Kakde, Complier Design.

Reference:

1. 7UHPEOH\ DQG 6RUHQVRQ_ ³7KHRU\ DQG SUDFWLFH RI FRPSLOHU ZULWLQJ´_ 0F_*UDZ +L
2. Aho Ullman & 5DYLVHWW\ _ &RPSLOHUV 3ULQFLSOHV_ 7HFKQLTXH DQG WROOV´ DGGLVL

Course Code: **IT802**
Title of the Course: **Soft Computing Techniques**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Unit	Contents	Hours
I	INTRODUCTION TO SOFT COMPUTING: Evolution of Computing ± Soft Computing Constituents ± From Conventional AI to Computational Intelligence ± Machine Learning Basics	9
II	GENETIC ALGORITHMS: Introduction, Building block hypothesis, working principle, Basic operators and Terminologies like individual, gene, encoding, fitness function and reproduction, Genetic modelling: Significance of Genetic operators, Inheritance operator, cross over, inversion & deletion, mutation operator, Bitwise operator, GA optimization problems, JSPP (Job Shop Scheduling Problem), TSP (Travelling Salesman Problem),Differences & similarities between GA & other traditional methods, Applications of GA.	9
III	NEURAL NETWORKS: Machine Learning using Neural Network, Adaptive Networks ± Feed Forward Networks ± Supervised Learning Neural Networks ± Radial Basis Function Networks ± Reinforcement Learning ± Unsupervised Learning Neural Networks ± Adaptive Resonance Architectures ± Advances in Neural Networks.	9
IV	FUZZY LOGIC: Fuzzy Sets ± Operations on Fuzzy Sets ± Fuzzy Relations ± Membership Functions ± Fuzzy Rules and Fuzzy Reasoning ± Fuzzy Inference Systems ± Fuzzy Expert Systems ± Fuzzy Decision Making	9
V	NEURO ± FUZZY MODELING: Adaptive Neuro ± Fuzzy Inference Systems ± Coactive Neuro ± Fuzzy Modeling ± Classification and Regression Trees ± Data Clustering Algorithms ± Rule base Structure Identification ± Neuro ± Fuzzy Control ± Case Studies.	9
Total		45

Text Book/s:

1. Jyh Shing Roger Jang, Chuen ,TsDL 6XQ_ (LML 0L]XWDQL_ ³1HXUR-)X]]\ DQG 6RIW &RPSXWLQJ
   Hall of India, 2003
2. .Z DQJ +_/HH_ ³)LUVW FRXUVH RQ)X]]\ 7KHRU\ DQG $SSOLFDWLRQV´_ 6SULQJHU ± Verlag
3. *HRUJH -_ .OLU DQG %R <XDQ_ ³)X]]\ 6HWV DQG)X]]\ /RJLF ± 7KHRU\ DQG $SSOLFDWLRQV´
4. -DHHVN__)UHHPDQ DQG 'YLG 0_ 6NDSXUD_ ³1HXUDO 1HWZRUNV $OJRULWKPV_ $SSOLFD
   3UHQWLFH+DOO RI 7HFKQLTXHV´_ 3HDUVRQ (GQ__ ____.
5. 'YLG (_ *ROGEHUJ_ ³*HQHWLF $OJRULWKPV LQ 6HDUFK_ 2SWLPL]DWLRQ DQG 0DFKLQH
   Wesley, 2007.

Reference Book/s:

1. 0LWVXR *HQ DQG 5XQZHL &KHQJ_´*HQHWLF $OJRULWKPV DQG (QJLQHHULQJ 2SWLPL]DW
   2000\ 3XEOLVKHUV
2. 0LWFKHOO 0HODQLH_ ³$Q ,QWURGXFWLRQ WR *HQHWLF $OJRULWKP´_ 3UHQWLFH +DOO
3. 6_1_6LYDQDQGDP_ 6_1_'HHSD_ ³,QWURGXFWLRQ WR *HQHWLF $OJRULWKPV´_ 6SULQJHU_
4. $_(_ (LEHQ DQG -_(_ 6PLWK ³,QWURGXFWLRQ WR (YROXWLRQDU\ &RPSXWLQJ´ 6SULQJHU_

Course Code: **IT803**

Title of the Course: **TCP/IP**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	1	0	4	3	3	10	10	80	100

Unit	Contents	Hours
I	INTRODUCTION AND ADDRESSES Introduction, The TCP/IP Architecture, protocol & layering, The Internet Protocol: IP Packet, IP Addressing, Subnet Addressing, IP Routing, Classless Inter-Domain Routing (CIDR), Address Resolution(ARP), Reverse Address Resolution(RARP), Internet Message Control Protols(ICMP) Error and Control Messages, Dynamic Host Configuration Protocol (DHCP), BOOTP; Domain Name System(DNS), NAT	9
II	NETWORK LAYER PROTOCOLS: Router functionality, Dynamic versus Static routing, Routing tables, Unicast routing: Routing Information Protocol (RIP), Border Gateway Protocol (BGP), Open Shortest Path First (OSPF), Routing algorithms (link state, distance vector), Multicast Routing: Routing protocols (MOSPF, DVMRP, CBT, and PIM), MBONE, IGMP, End-to-end datagram delivery, and Flow control	9
III	TRANSPORT LAYER PROTOCOLS & NEXT GENERATION IP: Transmission Control Protocol (TCP): TCP Reliable Stream Service, TCP Operation, TCP Protocol, User Datagram Protocol (UDP), Stream Control Transmission Protocol (SCTP), IPv6, ICMPv6, Transitioning from IPv4 to IPv6.	9
IV	APPLICATION LAYER PROTOCOLS: Client-Server Interaction: The Client-Server Paradigm, The Socket Interface. Naming With The Domain Name System, Electronic Mail Representation And Transfer, File Transfer And Remote File Access, World Wide Web Pages And Browsing,	9
V	MULTIMEDIA INFORMATION & NETWORKING: Introduction to Digital Audio, Audio compression, Streaming Audio, Internet Radio, Voice over IP, Introduction to video, Video compression, Video on demand The Real time transport Protocol: RTP Scenarios and terminology, RTP Packet format, RTP Control Protocol(RTCP) Session control Protocols: Session initiation Protocol, H.323 Multimedia communication systems, Media Gateway Control Protocols	9
Total		45

Text Book/s:

1. TCP/IP Protocol Suite, 4th Edition, by Behrouz A Forouzan (Tata Mcgraw Hill 2010).

Reference Book/s:

1. Internetworking with TCP/IP, Volume 1: Principles, Protocols, and Architecture, by Douglas Comer, 5th edition, Prentice Hall.
2. Computer Networking with Internet Protocols and Technology, 1/e -- © 2003 William Stallings
3. Communication networks, Leon-Gracia & Widjaja,2001, TMH
4. TCP/IP Illustrated, Volume 1 : The Protocols, 1/e -- © 2000, W. Richard Stevens, Person education
5. TCP/IP Illustrated, Volume 2 : The Implementation, 1/e -- © 1996, Gary R. Wright
6. An Engineering approach to computer networking, S. Keshav, Addison Wesley, 2001

Course Code: **IT804/1**

Title of the Course: **Embedded system (Ele- III)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Introduction to Embedded Systems, Review of Microprocessors and Micro-controllers, CISC and RISC Processor architecture. Components of Embedded System & its Classification, Characteristic of embedded system. Challenges in Embedded System design	9
II	Memory mapped I/Os, ARM and THUMB instruction set, ARM 3URJUDPPHU¶V PRGHO_GUHVVLQJ PRGHV_,QVWUXFWLRQ VHW and GHWDLO programming, data processing instructions, datransfer instructions, control flow instructions, simple assembly language program.	9
III	Overview of 8051 microcontroller , architecture, basic assembly language programming concept, program counter, data types , flag bits PSW register, register banks, stack instruction sets addresiing modes, arithmetic and logical instructions, programming of 8051, timers & conter programming.	9
IV	8051 Programming concepts using, C/C++/Java, Assembly language V/s High Level Language and its suitability for applications development, C program elements ± Micros and functions, data types, data structure, modifiers, statements, loops and pointers, queues and stacks, List & Order List and their use in the implementation of Embedded System Software. Process of Converting assembly language program and C language program to ROM image. Difference between Compliers & Cross Compliers. Embedded System testing. Simulation and debugging tools ± simulators,	9
V	I/O interfacing and Communication Buses, Serial Data Communication using USB/CAN/RS-232C and Comparison. I/O devices, ADC/ADC, Optical Devices such as LED / LCD Display devices, Opto- Isolator, Relay & Stepper motor, Timers/Counters. Parallel v/s serial communication. Parallel ports their uses in device interfacing.	9
Total		45

Text Book/s:

1. 5 DMNDPDO_ ³(PEHGGHG 6\VWHP $UFKLWHFWXUH 3URJUDPPLQJ 'HVLJQ´ 7DWD *UDZ +LO Edition, 2008.
2. 'U_ ._9_._. 3UDVDG_ ³(PEHGGHG _ UHDO WLPH V\VWHP_ &RQFHSWV_ 'HVLJQ_ & 3URJUDPPL Dreamtech Press Publication.
3. $QGUHZ 1_ 6ORVV_ 'RPLF 6\PHV_ &KULV :ULJKW_ ³ $50 6\VWHP 'HYHORSHU¶V *XLGH ± Desi 2SWLPL]LQJ 6RIWZDUH´_ (OVHYLHU 3XEOLFDWLon, 2004.

Reference Book/s:

1. 5 DMNDPDO_ ³(PEHGGHG 6\VWHP $UFKLWHFWXUH 3URJUDPPLQJ 'HVLJQ´
2. Tata Graw Hill Publication first Edition.
3. 'U_ ._ 9_ ._._ 3UDVDG_ *XSWD 'DV_ 9HUPD ³3URJUDPPLQJ IRU (PEHGGHG V\VWHP´ :LOH\ 'I India Pvt. Ltd.
4. Can Specification Version 2.0 Protocol Standard.
5. USB Specification Version 2.0 Protocol Standard.
6. I2C Specification Protocol Standard.
7. ARM7/TDMI (ReV4) ± Technical Ref Manual
8. 7DPP\ 1RHUJDDG_ ³(PEHGGHG 6\VWHP $UFKLWHFWXUH´ E\ (OVHYLHU_

Course Code: **IT804/2**

Title of the Course: **Mobile Computing (Ele- III)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	WIRELESS NETWORKS: Wireless Network, Wireless Network Architecture and generations: 1G, 2G and 3G, Wireless Switching Technology, Wireless Communication problem, Wireless Network Reference Model, Wireless Networking Issues & Standards. MOBILE COMPUTING: Mobile communication, Mobile computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Mobility Management	9
II	Introduction to Medium Access Control: TDMA, Direct sequence and Frequency hoping, CDMA. GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS (GSM): Mobile Services, System Architecture, Protocols, Localization & Calling, Handover, Security.	9
III	WIRELESS LAN: Infra red Vs radio transmission, Infrastructure and Ad-hoc Network, IEEE 802.11: System Architecture, Protocol Architecture, 802.11a to 802.11g, Newer Developments, Bluetooth. GPRS: GPRS System Architecture, UMTS: UMTS System Architecture. Satellite systems: GEO, LEO and MEO, routing, localization and handover	9
IV	MOBILE NETWORK LAYER: Mobile IP: Goals, Assumptions, Entities and Terminology, IP Packet Delivery, Agent Discovery, Registration, Tunnelling and Encapsulation, Optimizations, Dynamic Host Configuration Protocol (DHCP)	9
V	MOBILE TRANSPORT LAYER: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP, TCP over 2.5G/3G Wireless Networks. Architecture of WAP	9
Total		45

Text Book/s:

1. Mobile communication Engg- Lee W.C.Y
2. Wireless Communication, principles & practice-T.S.Rappaport
__ 0RELOH FRPPXQLFDWLRQ´_ 3HDUVRQ (GXFDWLRQ- Schiller

Reference Book/s:

1. Wireless Communication & networking-William Stalling
2. Mobile communication ±Rampantly.
3. Mobile Computing by R.R. R. Tripathi Dhanpat Rai & Company.
4. Mobile Computing by Raj Kamal Oxford University Press.

Course Code: **IT804/3**

Title of the Course: **Cyber Laws (Ele- III)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Concept of Information Technology and Cyber Space- Interface of Technology and Law -Jurisdiction in Cyber Space and Jurisdiction in traditional sense - Internet Jurisdiction - Indian Context of Jurisdiction - Enforcement agencies -International position of Internet Jurisdiction - Cases in Cyber Jurisdiction.	9
II	Information Technology Act, 2000 - Aims and Objects ² Overview of the Act ± Jurisdiction -Electronic Governance ± Legal Recognition of Electronic Records and Electronic Evidence -Digital Signature Certificates -Securing Electronic records and secure digital signatures - Duties of Subscribers - Role of Certifying Authorities - Regulators under the Act -The Cyber Regulations Appellate Tribunal - Internet Service Providers and their Liability ± Powers of Police under the Act ± Impact of the Act on other Laws .	9
III	E-Commerce - UNCITRAL Model - Legal aspects of E-Commerce - Digital Signatures - Technical and Legal issues - E-Commerce, Trends and Prospects - E-taxation, E-banking, online publishing and online credit card payment - Employment Contracts - Contractor Agreements, Sales, Re-Seller and Distributor Agreements, Non-Disclosure Agreements- Shrink Wrap Contract ,Source Code, Escrow Agreements etc	9
IV	Cyber Law and IPRs-Understanding Copy Right in Information Technology - Software - Copyrights vs Patents debate - Authorship and Assignment Issues - Copyright in Internet - Multimedia and Copyright issues -Software Piracy ± Patents - Understanding Patents - European Position on Computer related Patents - Legal position of U.S. on Computer related Patents - Indian Position on Computer related Patents ±Trademarks - Trademarks in Internet - Domain name registration - Domain Name Disputes & WIPO Databases in Information Technology -Protection of databases - Position in USA,EU and India.	9
V	Cyber Crimes -Meaning of Cyber Crimes ±Different Kinds of Cyber crimes ± Cyber crimes under IPC, Cr.P.C and Indian Evidence Law - Cyber crimes under the Information Technology Act,2000 - Cyber crimes under International Law - Hacking Child Pornography, Cyber Stalking, Denial of service Attack, Virus Dissemination, Software Piracy, Internet Relay Chat (IRC) Crime, Credit Card Fraud, Net Extortion, Phishing etc - Cyber Terrorism - Violation of Privacy on Internet - Data Protection and Privacy	9
Total		45

Text Book/s:

1. Kamlesh N. & Murali D.Tiwari(Ed), IT and Indian Legal System, Macmillan India Ltd, New Delhi
2. ._ /_-DPHV_ 7KH ,QWHUQHW_ $ 8VHU¶V *XLGH _____ 3UHQWLFH +DOO RI ,QGLD_ 1HZ 'HO
3. Chris Reed, Internet Law-Text and Materials, 2nd Edition, Universal Law Publishing Co., New Delhi
4. Vakul Sharma, Hand book of Cyber Laws, Macmillan India Ltd, New Delhi

Reference Book/s:

1. S.V.Joga Rao, Computer Contract & IT Laws(in 2 Volumes), Prolific Law Publications, New Delhi
2. T.Ramappa, Legal Issues in Electronic Commerce, Macmillan India Ltd, New Delhi
3. Indian Law Institute, Legal Dimensions of Cyber Space, New Delhi
4. Pankaj Jain & Sangeet Rai Pandey, Copyright and Trademark Laws relating to Computers, Eastern Book Co, New Delhi

Course Code: **IT804/4**

Title of the Course: **Information Security System (Ele- III)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Introduction to Security in Networks ± Characteristics of Networks ± Intrusion ± Kinds of security breaches ± Plan of attack - Points of vulnerability ± Methods of defense ± Control measures ± Effectiveness of controls	9
II	Basic encryption and decryption ± Encryption techniques ± Characteristics of good encryption systems ± Secret key cryptography ± Data Encryption Standard ± International Data Encryption Algorithm ± Advanced Encryption Standard ± Hash and MAC algorithms	9
III	Public Key encryptions ± Introduction to number theory - RSA algorithm ± Diffie-Hellman ± Digital Signature standard ± Elliptic Curve cryptography - Digital signatures and authentication ± Trusted intermediaries ± Security handshake pitfalls	9
IV	Secure sockets ± IPsec overview ± IP security architecture ± IPsec-Internet Key Exchanging(IKE) ± IKE phases ± encoding ± Internet security ± Threats to privacy ± Packet sniffing ± Spoofing - Web security requirements ± Real Time communication security ± Security standards± Kerberos.X.509 AuthenticationService	9
V	Security protocols ± Transport layer protocols ± SSL ± Electronic mail security ± PEM and S/MIME security protocol ± Pretty Good Privacy ± Web Security - Firewalls design principles ± Trusted systems ± Electronic payment protocols. Intrusion detection ± password management ± Viruses and related Threats ± Virus Counter measures, Virtual Private Networks.	9
Total		45

Text Book/s:

__ :LOLDP 6WDOOLQJV_ ³&U\SWRJUDSK\ DQG 1HWZRUN 6HFXULW_ 3ULQFLSOHV DQG PWDQGEDUGV_ Pearson Education India, 3rd Edition, 2003.

__ &KDUOLH .DXIPDQ_ 5DGLD 3HUOPDQ DQG 0LNH 6SHFLQHU_ ³1HWZRUN 6HFXULW_ 3ULYDWH &RPPXQLFDWLRQ LQ D SXEOLF ZRUOG´_ 3UHQWLFH +DOO ,QGLD_ _QG (GLWLRQ_ ____

Reference Book/s:

1. &KDUOHV 3_ 3OHHJHU_ ³6HFXULW\ LQ &RPSXWLQJ´_ 3HDUVRQ (GXFDWLRQ $VLD_ _WK (
2. :LOLDP 6WDOOLQJV_ ³1HWZRUN 6HFXULW\ (VVHQWLDOV_ $SSOLFDWLRQV DQG VWDQ 2003. 3HDUVRQ (GXFDWLRQ $VLD_

Course Code: **IT805/1**

Title of the Course: **Advanced Databases (Ele- IV)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Distributed databases features- distributed database management system- review of databases and computer networks, levels of distribution transparency, reference architecture type of data fragmentation, distribution transparency for read only applications and update applications, distributed database access primitives and integrity constraints.	9
II	Distributed databases design a frame work for distributed database design, the design of database fragmentation the allocation of fragments, translation of global queries to fragment queries, equivalence transform of queries, distributed grouping and aggregate function evalution parametric.	9
III	Query optimization, problems in query optimization, objectives in query process optimization, simpler representation of queries model for query optimization, join query, general queries, concept of two phase commit, distributed transaction concept of replication snapshot on replication and multimaster replication conflict resolution in multimaster replication concurrency control and database recovery.	9
IV	The evolution of object oriented concepts object - oriented concepts, characteristics of an object - oriented data model, object schemas class-subclass relationships interobject relationships, late and early binding, support for versioning. Similarities & differences between OODM and other data models, features of an object-oriented databases management system, OODBMS architectural approaches-extended relational model approach semantic database approach object oriented database programming language extension approach DBMS generator approach object definition language and object query language.	9
V	OODBMS architectures performance issues in OODBMS application selection for OODBMS database design for an object relational database management system (ORDBMS). Structured type & ADTs, object identity, extending ER model, using nested collections, storage and access methods, query processing, query optimization, design and architecture of POSTGRES, distributed computing in CORBA and EJB	9
Total		45

Text Book/s:

1. Distributed data bases principles and systems by Ceril & Pelagatti (McGraw Hill Publ.)
2. Fundamentals of Database System by Elmisky & Navathe (3rd Ed. Addison Welsey)
3. Object Oriented Database System - Approaches & Architectures by C.S.R. Prabhu(PHI Pub.)

Reference Book/s:

1. Database System - Design Implementation & Management by Peter Rob & Carlos Coronel (Course Tech.)
2. Database Management Systems by Raghu Ramakrishnan & Johannes Gehrke.
3. Oracle 8i Distributed Database Replication Manual

Course Code: **IT805/2**

Title of the Course: **Ecommerce and Enterprise Resource Planning (Ele- IV)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Introduction to electronics-commerce: The scope of E-COM definition of E-COM, E-COM and trade cycle, electronic market electronic data interchange internet commerce, E-commerce in perspective, the value chain, supply chains. Electronic Commerce Software: What kind of software solution do you need marketing smart hosting service basic packages midrange package enterprise solution for large firms.	9
II	Business-to-Business electronic commerce: inter-organizational transaction electronics markets, electronic data interchange (EDI), EDI-technology, EDI & business, inter-organizational E-com Business through consumer electronic commerce: Consumer trade transactions, the elements of E-commerce-elements, visibility, the e-shop, online payment, delivering the goods, after sales service, internet e-com security, a web site evaluation mode. E-business: Internet bookshops, grocery suppliers, software suppliers and supports, electronics newspapers, internet banking, virtual auction, online share dealing, e-diversity.	9
III	Electronic payment system: The basics of electronic payment systems electronic cash electronic wallets, smart cards, credit and charge cards. The environment of electronic commerce: international legal, ethical and tax issues: International nature of electronic commerce, the legal environment of electronic commerce, taxation and E-COM, business plans for implementing E-COM: planning the E-commerce project, managing electronic commerce implementation.	9
IV	Introduction to ERP, Benefits, ERP Related Technologies, Business Process Reengineering, Data Warehousing, Data Mining, OLAP, Supply Chain Management, ERP Implementation Life Cycle, Hidden Cost.	9
V	Client/Server Architecture for ERP, Business Modeling & ERP Architechture, SWOT Analysis of various ERP Packages, Supply Chain Enabled ERP, ERP & EDI Integration, ERP for Manufacturing & Non Manufacturing Industries.	9
Total		45

Text Book/s:

1. E-Commerce by David Whiteley (Mcgraw Hill Pub.)
2. Electronic-Commerce by Gary P. Schneider & James T. Perry (Course Technology Thomson Learning)
2. ERP Demystified by Alexis Leon (Tata Mcgraw Hill Publication)
3. Enterprise Resource Planning by Parag Diwan&Sunil Sharma (Pentagon Press)

Reference Book/s:

1. Business on the net by K.N. Agarwala. A. Lal, Deekjha Agarwala (Macmillan Pub.)
2. Enterprise Resource Planning Systems by Deepali Singh Dhanpat Rai & Company.

Course Code: **IT805/3**

Title of the Course: **Neural Networks & Fuzzy Logic (Ele- IV)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Introduction: Biological NN, ANN, Classification of ANN, Activation Functions, Training an ANN, Mc-Culloch Pits Neural Model, Application of ANN.	9
II	Networks: HEBB learning rule, DELTA rule, ADALINE, MADALINE, Perceptron layer network	9
III	Associative memory- characteristics, architecture, algorithm, applications. Introduction to SOM, Back propagation network-architecture, algorithm.	9
IV	Classical & Fuzzy Sets : Introduction to classical sets - properties, Operations and relations; Fuzzy sets, Membership, Uncertainty, Operations, properties, fuzzy relations, cardinalities, membership functions.	9
V	Fuzzy Logic System Components: Fuzzification, Membership value assignment, development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods. Fuzzy logic applications: Fuzzy logic control and Fuzzy classification.	9
Total		45

Text Book/s:

1. 5 DMDVHNKDUDQ DQG 3DL_ ³1HXUDO 1HWZRUNV_)X]]\ ORJLF_ *HQHWLF DOJRULWKPV_ ± DQG $SSOLFDWLRQV´
2. -DFHN 0_ =XDUGD_ ³,QWURGXFWLRQ WR $UWLILFLDO 1HXUDO 6\VWHPV´_ -DLFR 3XEOLVKLQJ +RXVH_ _____

Reference Book/s:

1. 1_ <DGDLDK DQG 6_ %DSL 5DMX_ ³1HXUDO DQG)X]]\ 6\VWHPV_)RXQGDWLRQ_ $UFKLWHFWXUH $SSOLFDWLRQV´_ - Pearson Education
2. -DPHV $)UHHPDQ DQG 'DYLV 6NDSXUD_ ³1HXUDO 1HWZRUNV´_ 3HDUVRQ_ _____
3. 6LPRQ +\NLQV_ ³1HXUDO 1HWZRUNV´_ 3HDUVRQ (GXcation
4. &_(OLDVPLWK DQG &+_$QGHUVRQ_ ³1HXUDO (QJLQHHULQJ´_ 3+,
5. %RUN .RVN_ ³1HXUDO 1HWZRUNV DQG)X]]\ /RJLF 6\VWHP´_ 3+, 3XEOLFDWLRQV_

Course Code: **IT805/4**
Title of the Course: **Multimedia & its application (Ele-II)**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Unit	Contents	Hours
I	Introduction: Multimedia and its types, Introduction to Hypermedia, Hyper Text, Multimedia Systems and their Characteristics, Challenges, Desirable Features, Components and Applications, Trends in Multimedia. Multimedia Technology: Multimedia Systems Technology , Multimedia Hardware devices, Multimedia software development tools, Multimedia Authoring Tools, Multimedia Standards for Document Architecture, SGML, ODA, Multimedia Standards for Document interchange, MHEG, Multimedia Software for different media. Storage Media: Magnetic and Optical Media, RAID and its levels, Compact Disc and its standards, DVD and its standards, Multimedia Servers.	9
II	Audio: Basics of Digital Audio, Application of Digital Audio, Digitization of Sound, Sample Rates and Bit Size, Nyquist's Sampling Theorem Typical Audio Formats Delivering Audio over a Network , Introduction to MIDI (Musical Instrument Digital Interface), Components of a MIDI System Hardware Aspects of MIDI, MIDI Messages. Audio Compression, Simple Audio Compression Methods, Psychoacoustics, MPEG Audio Compression.	9
III	Basics of Compression: Classifying Compression Algorithms, Lossless Compression Algorithms, Entropy Encoding, Run-length Encoding, Pattern Substitution, Basics of Information theory, Huffman Coding, Adaptive Huffman Coding, Arithmetic Coding, Lempel-Ziv-Welch (LZW) Algorithm, Source Coding Techniques: Transform Coding, Frequency Domain Methods, Differential Encoding.	9
IV	Image and Graphics Compression: Colour in Images, Types of Colour Models, Graphic/Image File Formats: TIFF, RIFF, BMP, PNG, PDF, Graphic/Image Data, and JPEG Compression, GIF Compression. Video Compression: Basics of Video , Video Signals, Analog Video, Digital Video, TV standards, H. 261 Compression, Intra Frame Coding, Inter-frame (P-frame) Coding, MPEG Compression, MPEG Video, TheMPEG Video Bitstream , Decoding MPEG Video in Software	9
V	Multimedia Communication: Building Communication network, Application Subsystem, Transport Subsystem, QOS, Resource Management, Distributed Multimedia Systems	9
Total		45

Text Book/s:

1. 5 DOI 6WHLQPHW] DPG.ODUD1DKUVWHGW_³ 0XOWLPHGLD &RPSXWLQJ &RPPXQLFDWLRQ
   Pearson Education.

Reference Book/s:

1. Parag +DYDOGDU_ *HUDUG 0HGLRQL_³0XOWLPHGLD 6\VWHPV 'HVLJQ´_ 3+,_ /DWHVW (GL

Course Code: **IT806**
Title of the Course: **Compiler Design**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
0	0	3	3	2	25	25	50

Practical based on above mentioned Syllabus.

Course Code: **IT807**
Title of the Course: **Soft Computing Techniques**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
0	0	3	3	2	25	25	50

Practical based on above mentioned Syllabus.

Course Code: **IT808**
Title of the Course: **Project Phase II**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
0	0	6	6	6	75	75	150

Project based on above mentioned Syllabus/recent technologies.