BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE IN FACULTY OF SCIENCE & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM

III - SEMESTER B.E. (COMPUTER TECHNOLOGY)

Course Code	Course Title	Teaching Scheme			No. of Credits	Examination Scheme									
		Hours per week				Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
3BECT01	Applied Mathematics – III	3	1	0	4	3	80	10	10	100	40	-	-	-	-
3BECT02	Computer Architecture & Organization	3	1	0	4	3	80	10	10	100	40	-	-	-	-
3BECT03	Advanced-C Programming	3	0	-	3	3	80	10	10	100	40	-	-	-	-
3BECT04	Electronic Devices & Circuits	3	0	-	3	3	80	10	10	100	40	-	-	-	-
3BECT05	Digital Circuits & Fundamentals of Microprocessor	3	0	-	3	3	80	10	10	100	40	-	-	-	-
3BECT06	Advanced-C Programming	0	0	3	2	-	-	-	-	-	-	25	25	50	25
3BECT07	Electronic Devices & Circuits	0	0	3	2	-	-	-	-	-	-	25	25	50	25
3BECT08	Digital Circuits & Fundamentals of Microprocessor	0	0	3	2	-	-	-	-	-	-	25	25	50	25
		15	2	9	23	-									
		26			23					500				150	
						650									

BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE IN FACULTY OF SCIENCE & TECHNOLOGY) TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM

IV - SEMESTER B.E. (COMPUTER TECHNOLOGY)

Course Code	Course Title	Teaching Scheme			No. of Credits	Examination Scheme									
		Hours per week				Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
4BECT01	Applied Mathematics – IV	3	1	0	4	3	80	10	10	100	40	-	-	-	-
4BECT02	Data Structures	3	0	-	3	3	80	10	10	100	40	-	-	-	-
4BECT03	Design Principles of Programming Languages	3	0	0	3	3	80	10	10	100	40	-	-	-	-
4BECT04	Theory of Computation	3	1	0	4	3	80	10	10	100	40	-	-	-	-
4BECT05	Object Oriented Methodologies	3	0	-	3	3	80	10	10	100	40	-	-	-	-
4BECT06	Data Structures	0	0	3	2	-	-	-	-	-	-	25	25	50	25
4BECT07	Object Oriented Methodologies	0	0	3	2	-	-	-	-	-	-	25	25	50	25
4BECT08	Programming-I	0	0	3	2	-	-	-	-	-	-	25	25	50	25
		15	2	9	23										
		26			**23**					**500**				**150**	
						650									

BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE IN FACULTY OF SCIENCE & TECHNOLOGY) TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM

V - SEMESTER B.E. (COMPUTER TECHNOLOGY)

Course Code	Course Title	Teaching Scheme				Examination Scheme									
		Hours per week			No. of Credits	Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
5BECT01	Advanced Data Structure	3	0	-	3	3	80	10	10	100	40	-	-	-	-
5BECT02	Design and Analysis of Algorithms	3	0	-	3	3	80	10	10	100	40	-	-	-	-
5BECT03	Java Programming	3	0	-	3	3	80	10	10	100	40	-	-	-	-
5BECT04	System Programming	3	0	0	3	3	80	10	10	100	40	-	-	-	-
5BECT05	IDCC-I	3	0	0	3	3	80	10	10	100	40	-	-	-	-
5BECT06	Advanced Data Structure	0	0	3	2	-	-	-	-	-	-	25	25	50	25
5BECT07	Design and Analysis of Algorithms	0	0	3	2	-	-	-	-	-	-	25	25	50	25
5BECT08	Java Programming	0	0	3	2	-	-	-	-	-	-	25	25	50	25
5BECT09	Seminar	0	0	3	2	-	-	-	-	-	-	50	-	50	25
		15	0	12	23										
		27			**23**					**500**				**200**	
										700					

Seminar: A student is required to prepare an advanced technical topic of his/her area of interest from the stream and deliver before a seminar guide. Also he/she is required to submit seminar report.

BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE IN FACULTY OF SCIENCE & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM

VI - SEMESTER B.E. (COMPUTER TECHNOLOGY)

Course Code	Course Title	Teaching Scheme			No. of Credits	Examination Scheme									
		Hours per week				Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
6BECT01	Web Technology	3	0	-	3	3	80	10	10	100	40	-	-	-	-
6BECT02	Computer Network & Communication	3	0	-	3	3	80	10	10	100	40	-	-	-	-
6BECT03	Software Engineering	3	0	-	3	3	80	10	10	100	40	-	-	-	-
6BECT04	Management Information System	3	0	0	3	3	80	10	10	100	40	-	-	-	-
6BECT05	IDCC-II	3	0	0	3	3	80	10	10	100	40	-	-	-	-
6BECT06	Audit Heads	0	0	0	1	Audit Course									
6BECT06	Web Technology	0	0	3	2	-	-	-	-	-	-	25	25	50	25
6BECT07	Computer Network & Communication	0	0	3	2	-	-	-	-	-	-	25	25	50	25
6BECT08	Software Engineering	0	0	3	2	-	-	-	-	-	-	25	25	50	25
6BECT09	Industry Exposure Program	0	0	0	2	-	-	-	-	-	-	50	-	50	25
		15	0	9	23										
		24			**24**					**500**				**200**	
						700									

Note: Industry Exposure Program for two weeks shall be required to be completed by every student by beginning of the semester.

BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE IN FACULTY OF SCIENCE & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM

VII - SEMESTER B.E. (COMPUTER TECHNOLOGY)

Course Code	Course Title	Teaching Scheme				Examination Scheme									
		Hours per week			No. of Credits	Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
7BECT01	Operating System	3	0	-	3	3	80	10	10	100	40	-	-	-	-
7BECT02	Computer Graphics	3	0	-	3	3	80	10	10	100	40	-	-	-	-
7BECT03	Database Management System	3	0	-	3	3	80	10	10	100	40	-	-	-	-
7BECT04	Embedded System	3	0	0	3	3	80	10	10	100	40	-	-	-	-
7BECT05	CE-I 1.Neural Network & Fuzzy Logic 2.Advanced Computer Architecture 3.Enterprise Resource Planning 4.Multimedia Systems	4	0	0	4	3	80	10	10	100	40	-	-	-	-
7BECT06	Operating System	0	0	3	2	-	-	-	-	-	-	25	25	50	25
7BECT07	Computer Graphics	0	0	3	2	-	-	-	-	-	-	25	25	50	25
7BECT08	Database Management System	0	0	3	2	-	-	-	-	-	-	25	25	50	25
7BECT09	Major Project Literature Review & Presentation	0	0	3	4	-	-	-	-	-	-	25	25	50	25
		16	0	9	24	-									
		25			**24**					**500**				**200**	

									700							

**BACHELOR OF ENGINEERING (FOUR YEARS DEGREE COURSE
IN FACULTY OF SCIENCE & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
VIII - SEMESTER B.E. (COMPUTER TECHNOLOGY)**

Course Code	Course Title	Teaching Scheme				Examination Scheme										
		Hours per week			No. of Credits	Theory						Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								Sessional							
							ESE	MSE	IE			TW	POE		
8BECT01	Compiler Construction	3	0	-	3	3	80	10	10	100	40	-	-	-	-
8BECT02	Data Warehousing and Data Mining	3	0	-	3	3	80	10	10	100	40	-	-	-	-
8BECT03	CE-II 1.Cloud Computing 2.Advance Database 3.Distributed System 4. E-Commerce	4	0	0	4	3	80	10	10	100	40	-	-	-	-
8BECT04	OE-I	2	0	0	2	3	80	10	10	100	40	-	-	-	-
8BECT05	Compiler Construction	0	0	3	2	-	-	-	-	-	-	25	25	50	25
8BECT06	Data Warehousing and Data Mining	0	0	3	2	-	-	-	-	-	-	25	25	50	25
8BECT07	Major Project	0	0	6	6	-	-	-	-	-	-	75	75	150	75
		12	0	12	22										
		24			**22**					**400**				**250**	
										650					

INTER DISCIPLINARY CLUSTER COURSES

	V – SEMESTER				VI - SEMESTER		
S.N.	**COURSE TITLE**	**CODE**	**PARENT BOS**	**S.N.**	**COURSE TITLE**	**CODE**	**PARENT BOS**
01			**ELECTRICAL (EEE)**	01			**ELECTRICAL (EEE)**
02			**MECHANICAL**	02			**MECHANICAL**
03			**CIVIL**	03			**CIVIL**
04			**MINING**	04			**MINING**
05			**EN/ ECE/ EXTC**	05			**EN/ ECE/ EXTC**
06	Cyber Security	5BECT05/5BECS05	**CT/CSE**	06	Internet & Web Technology	6BECT05/6BECS05	**CT/CSE**
07			**INFORM. TECH.**	07			**INFORM. TECH.**
08			**INSTRUMENTATION**	08			**INSTRUMENTATION**

LIST OF AUDIT COURSES/ EVENTS

01	Business Communication Skills	07	
02	Advanced Excel	08	
03		09	
04		10	
05		11	
06		12	

PROPOSED COURSES FOR OPEN ELECTIVE

01	Financial Management	04	Project Management & Quality
02	Foundation Course in HR Mgmt.	05	Cyber laws: International Perspective
03	Entrepreneur Development	06	Corporate Ethics

GONDWANA UNIVERSITY, GADCHIROLI
FACULTY OF SCIENCE AND TECHNOLOGY
CONSLIDATED STATEMENT OF VARIOUS PARAMETERS IN TEACHING & EXAMINATION SCHEME OF
B.E. (COMPUTER TECHNOLOGY)

SR.NO.	SEMESTER	NO. OF THEORY COURSES	NO OF LABS/PRACT	TEACHING HOURS(TH) (L+T)	TEACHING HOURS (PRACT)	TOTAL CREDIT	MAX. THEORY MARKS	MAX.PRACT MARKS	MAX. MARKS TOTAL
1	III	5	3	17	9	23	500	150	650
2	IV	5	3	17	9	23	500	150	650
3	V	5	4	15	12	23	500	200	700
4	VI	5	4	15	9	23	500	200	700
5	VII	5	4	16	9	24	500	200	700
6	VIII	4	3	12	12	22	400	250	650
		29	**20**	**92**	**60**	**138**	**2900**	**1100**	**4000**

Course wise Board of Studies Affiliation

Board of Studies	Course Codes
APPLIED SCIENCES & HUMANITIES	3BECT01, 4BECT01
ELECTRONICS ENGINEERING	3BECT04, 3BECT05

Choice-based Credit System (CBCS)
VII-Semester B. E. (Computer Technology)

Course Code: 7BECT01
Title of the Course: Operating System

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction, basic h/w support necessary for modem operating systems -Services provided by OS, system programs and system calls - brief discussions of evolution of OS - real time and distributed systems: a brief overview of issues. Processes and 3 levels of scheduling - process control block and context switch -goals of scheduling and different scheduling algorithms - threads: user level and kernel level.	09
II	CPU Scheduling: Review of multiprogramming, concepts, scheduling concepts, scheduling algorithms, algorithm evaluation, multiple processor scheduling. Process cooperation and synchronization, mutual exclusion and implementation, semaphores, conditional critical regions and monitors -classical inter - process communication problems - message passing.	09
III	Deadlocks and strategies for handling them - protection and security issues - access lists, capabilities, and cryptographic techniques - introduction to distributed systems. File systems, user interface - disk space management and space allocation strategies -examples from UNIX, DOS, Windows etc - directory structures - disk caching - file system consistency and logs -disk arm scheduling strategies. Disk scheduling: physical characteristics, FCFS scheduling, SSTF scheduling, SCAN, CSCAN, Selecting a disk-scheduling algorithm, sector queuing.	09
IV	Memory management techniques - contiguous and non-contiguous -paging and segmentation - translation look aside buffers (TLB) and overheads - virtual memory and demand paging - page faults and instruction restart - problems of large address spaces - page replacement algorithms and working sets - miscellaneous issues.	09
V	Protection and Security: Goal of Protection, Mechanism and policies, domain of protection, access matrix, implementation of access matrix, dynamic protection structures, revocation, existing systems, language based protection, protection problems security.	09
	Total	45

Text Book/s:
1. Modern Operating Systems - Tanenbaum, Pearson Edn. 2nd edn.
2. Operating System concepts - Silberchatz & Galvin, Addison Wesley, 2nd Edn.
3. Operating System Concepts & Design - By Milan Milenkovic (TMH)

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT02
Title of the Course: Computer Graphics

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction: Introduction to Computer Graphics & its application -> Origin of Computer Graphics, interactive computer graphics. Overview of Graphics System. Graphics Input Devices, Graphics Output Devices, Display Devices: Common display devices, CRT Technology, storage Tube, Calligraphic, Raster refresh display. Basic Concept: Refresh, Flicker, Scan Rate, Screen Size, Aspect Ratio, Interlacing and Non-Interlacing Techniques, cell and runlength encoding.	9
II	Point Pixel Plotting. Line Generation Algorithms: DDA, Bresenham's Algorithm, Bresenham's Integer Line generation algo, General Bresenham'salgo. Circle Generation: Bresenham's Algorithm for all quadrants , Aliasing & Antialiasing techniques. Polygons, Polygon representation, Polygon Filling: Simple ordered edge list algorithm. Edge fillalgorithm, Edge flag algo, seed fill algo.	9
III	Graphics Primitives: Display devices, Normalized device coordinates, display files structure. Segments: The segment table, segment creation, closing a segment, detecting a segment, renaming a segment , other display file structures and Problems on various line commands.	9
IV	Windowing & Clipping: The viewing transformations. Line Clipping: Sutherland-Cohen algo, Midpoint Subdivision algo, Cyrus Beck algo. Polygon Clipping: Sutherland-Hodgman algo.	9
V	Transformation 2-Dimension & 3 Dimension Transformation: Basic Transformation: Scaling, Rotation, Translation,Reflection& Shearing, Matrix representation, Homogeneous Coordinates &Composite transformations, rotation about an arbitrary point, 3-Dimension Transformation - 3D geometry, 3D primitives, Scaling, Translating,Rotation about an arbitrary axis, Parallel Projection, SpecialProjections. Curves: Bezier & B-spline Curves	9
	Total	45

Text Book/s:
1. Procedural Elements for Computer Graphics : David F. Rogers, Me Graw Hill.
2. Principles of Interactive Graphics : Newman Sproull, Me Graw Hill, International Student Publication.
3. Mathematical Elements fro Computer Graphics by David F Rogers and Adams

Reference Book/s:
1. Computer Graphics 2nd edition : Donald Heam, M. Pauline Beker, Prentice Hall of India
2. Computer Graphics A programming approach : Steven Harrignton,Mc Graw Hill, International student edition.
3. IBM PC and PS/2 Graphics Hand Book : E. Keja & Johns, Asian Edition.
   Micro Computer Hardware Design : D. Protopapus, Prentice Hall Editions.

VII-Semester B. E. (Computer Technology)

Course Code: **7BECT03**
Title of the Course: DATABASE MANAGEMENT SYSTEM.

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	00	--	03	03	03	10	10	80	100

Unit	Contents	Hours
I	Basic concepts, Advantages of a DBMS over file processing systems, Data abstraction, Data Models and data independence, Overall structure of a DBMS, Database Languages. Data modeling: Basic Concepts, Types of data models, ER data model and Object - oriented data model. Relational, Network and Hierarchical data models. Basics of ER diagram, Extended ER features.	09
II	Relational Model: Basic concepts. Attributes and domains, Concept of integrity and referential constraints, Relational Query Languages (Relational Algebra and relational Calculus) SQL: Structure of a SQL query, SQL queries, Set Operations, Predicates and Joins, Set membership, Tuple variables, set comparison, ordering of tuples, Aggregate functions, nested queries, Database modification using SQL, Relational Database Design: Pitfalls in relational database design.	09
III	Functional Dependencies, Armstrong's axioms, Closure of set of functional dependencies, Normalization, Closure of a attribute sets, normal forms, 1NF, 2NF, 3NF, Codd's rule.	09
IV	Basic concept of a transaction, Buffer Management, Transaction Model , Log Based Recovery, Checkpoints, Shadow Paging, Failure With Loss of non-volatile Storage, Stable Storage Implementation, Concurrency Control, Schedules, Testing of Serializability, Lock-based Protocols, Time Stamp Based Protocols.	09
V	Database systems Architecture: Centralized client-server systems, Parallel systems, Distributed systems. Geographical databases, Multimedia databases. Distributed transaction model.	09
	Total	45

Text Book/s:

1. Database System Concepts : Korth, Silberschatz : Mcgraw-Hill
2. Database Management System : Majumdar & Bhattacharya
3. Principles of Databases : Jeffrey D. Ullman
4. An Introduction To Database Systems : C.J.Date (Adison Wesley- Nerosa)

Course Code: 7BECT04
Title of the Course: Embedded System

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	00	--	03	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to Embedded system, examples of embedded systems, challenges to embedded system design, Processor in the System, Microcontroller, Memory Devices, Embedded System Project Management, embedded system design and Co-design issues in System development Process, Design cycle in the development phase for an embedded system	08
II	Introduction to Real – Time Operating Systems: Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management,Interrupt Routines in an RTOS Environment	09
III	EmbededSoftware:Programming embedded systems in assembly and C – Program elements used for embedded programs. Embedded Software Development Tools: Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques: Testing on Host Machine, Using Laboratory Tools.	10
IV	Basic Design Using a Real-Time Operating System : Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like uC-OS (Open Source); An Example System.	08
V	Overview of Microcontroller: Microcontroller and Embedded Processors, Overview of 8051 Microcontroller family: Architecture, The program Counter and ROM Spaces in the 8051, Data types, 8051 Flag Bits ad PSW Register, 8051 Register Banks and Stack Instruction set, Loop and Jump Instructions, Call Instructions, Time delay generations and calculations, I/O port programming Addressing Modes, accessing memory using various addressing modes, Arithmetic instructions and programs, Communication with 8051: Basics of Communication, Overview of RS-232, I2C Bus, UART, USB, 8051 connections to RS-232, 8051 serial communication programming, 8051 interrupts.	10
	Total	45

Text Book/s:

1.Raj Kamal, "Embedded Systems", second edition, 2008. TMH.

2. David E. Simon, "An Embedded Software Primer", second edition.Pearson Education.

Reference Book/s:
1. K.J. Ayala, "The 8051 Microcontroller", Penram International, 1991.
2. Dr. Rajiv Kapadia, "8051 Microcontroller & Embedded Systems", Jaico
3. Dr. Prasad, "Embedded Real Time System", Wiley Dreamtech, 2004.
4. M.A. Mazidi and J. G. Mazidi, "The 8051 Microcontroller and Embedded Systems", PHI, 2004

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT05
Title of the Course: CE-I: Neural Network & Fuzzy Logic

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Fundamental Concepts and Models of Artificial Neural Systems: Biological Neurons and Their Artificial Models, Models of Artificial Neural Networks, Learning and Adaptation, Neural Network Learning Rules, Overview of Neural Networks.	09
II	Single-Layer Perceptron Classifiers: Discriminant Functions, Linear Machine and Minimum Distance Classification, Training and Classification using the Discrete Perceptron: Algorithm and Example, Single Layer continuous Perceptron Networks for Linearly Separable Classifications,	09
III	Multilayer Feedback Networks: Linearly Non-separable Pattern Classification, Delta learning Rule, Feedforward Recall and error Back-Propagation Training, Learning factors, Classifying and expert Layered Networks, Functional Link Networks.	09
IV	From Classical (CRISP) Sets to Fuzzy Sets: Introduction, Crisp sets: An overview, Fuzzy sets: Basic Types, Fuzzy sets: Basic Concepts, characteristics and significant of the Paradigm Shift. Fuzzy Sets Versus Crisp Sets: Additional Properties of a - cuts, Representation of Fuzzy sets, Extension Principles for Fuzzy sets.	09
V	Operations on Fuzzy Sets: Types of Operations, Fuzzy Complements, Fuzzy Intersections: t-Norms, Fuzzy Unions: t-Conorms, Combinations of operations, Aggregation Operations. Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals, and Arithmetic Operations on Fuzzy Numbers, Lattice Fuzzy Numbers, And Fuzzy Equations.	09
	Total	45

Text Book/s:
1. J.M.. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House, India
2. George J. Klir and Bo Yuan, Fuzzy Sets and Fuzzy Logic, Theory and Applications, PHI, Pvt. Ltd. - 1997.

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT05
Title of the Course: CE-I: Advanced Computer Architecture

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Trends towards parallel processing, parallelism in uniprocessor systems, parallel computer structures, architectural classification schemes, parallel processing applications, memory hierarchy in parallel processing systems, addressing schemes. Pipleline concept, linear pipelining and space time diagram, classification of pipeline processors, nonlinear pipeline and reservation table, interleaved memory organization, arithmetic pipelines, principles of designing pipeline processors, vector processing.	09
II	SIMD array processors, organization, masking and routing mechanisms, inter PE communications, SIMD inter connection networks, single stage and multi stage networks, mesh connected Illiac networks, parallel shifter, shuffle exchange and omega networks, parallel algorithms for array processors, matrix multiplication, polynomial evaluation, parallel sortings, fast fourier transform computation, associative array processor.	09
III	Multiprocessor architecture, loosely coupled and tightly coupled multiprocessor systems, processor characteristics, inter connection networks crossbar switch and multi port memories, multi stage networks, banyan and delta networks parallel memory organization, multiprocessing operating systems, classification and requirements, software requirements for MPS, language features to exploit parallelism, multi processor scheduling strategies, parallel algorithms.	09
IV	Data flow computers, control flow versus data flow, data flow computer architectures, data flow graphs, data flow languages, Dennis and Irvine machines, dataflow design alternatives, dependence driven and multi level event driven approaches, VLSI computing structures, systolic array architecture, VLSI matrix arithmetic processor.	09
V	Performance evaluation of computers, measurements and parameters, stochastic model simulation model, study of architecture of Cray and Cyber super computers, massively parallel processor systems, image processing on MPP, C.mmp multiprocessor system, crazy X MP super computer.	09
	Total	45

Text Book/s:
1. Kai Hwang, Faye A. Briggs, "Computer Architecture and Parallel Processing" McGraw-Hill international Edition

Reference Book/s:
1. Kai Hwang, "Advanced Computer Architecture", Tata McGraw-Hill
2. William Stallings, "Computer Organization and Architecture, Designing for performance" Prentice Hall, Sixth edition.
3. Kai Hwang, Scalable Parallel Computing .
4. Harrold Stone, High performance computer Architecture .
5. Richard Y. Kain, Advanced Computer Architecture
6. http://www.intel.com/products/processor (for Intel Itanium Processor)

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT05
Title of the Course: CE-I: Enterprise Resource Planning

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	ERP – Curtain Raiser: An overview, Accommodating variety, Integrated Management Information, Seamless Integration, Supply Chain Management, Resource Management, Integrated data model, Scope, Technology, Benefits of ERP, Evolution, ERP revised, ERP & Modern Enterprise, problems.	09
II	ERP & Related Technologies: MAn overview, Business Process Reengineering(BPR), Management Information System(MIS), Decision Support Systems(DSS), Executive Information Systems (EIS), Data Warehousing, Data Mining, OLAP	09
III	Business Engineering & ERP: An overview, What is Business Engineering (BE)? ERP Implementation and the Competitive Advantage: Significance of BE, Principles of BE, BPR, ERP & IT, BE with IT, ERP and Management concerns, problems. Business Modeling: An overview, Building the Business Model, problems.	09
IV	The ERP Market & Making of ERP: An overview, Role of consultants, vendors & users, customization, precautions, ERP: Post-implementation options, ERP implementation Lifecycle, Guidelines for ERP implementation, problems. ERP & competitive strategy, problems.	09
V	An overview, SAP AG, SAP R/3 Applications, Baan, Oracle, PeopleSoft, JD Edwards, Examples of Indian ERP packages, problems. An overview, Market Dynamics & Competitive Strategy, problems. Future Directions in ERP. Various ERP Case studies.	09
	Total	45

Text Book/s:
1. Enterprise Resource Planning – Concepts & Practice (Second Edition) By V. K. Garg & N.K. Venkitakishnan (PHI)
2. Enterprise Resource Planning- Alexis Leon (TMH)

Reference Book/s:
1. ERP Demystified – By Alexis Leon (TMH)

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT05
Title of the Course: CE-I: Multimedia Systems

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Multimedia Authoring and Data Representations: Introduction to Multimedia, Multimedia Authoring and Tools, Graphics and Image Data Representations. Color in Image and Video, Fundamental Concepts in Video, Basics of Digital Audio.	09
II	Multimedia Data Compression: Lossless Compression Algorithms, Run-Length Coding, Variable-Length Coding (VLC), Huffman Coding, Adaptive Huffman Coding, Lossy Compression Algorithms, Quantization, Uniform Scalar Quantization, Nonuniform Scalar Quantization, Vector Quantization, Transform Coding, Discrete Cosine Transform (DCT), Image Compression Standards.	09
III	Basic Video Compression Techniques, MPEG Video Coding I - MPEG-1 and 2, MPEG Video Coding II — MPEG-4, 7 and Beyond, MPEG Audio Compression.	09
IV	Multimedia Communication: Computer and Multimedia Networks, Multimedia Network Communications and Applications, Interactive TV (ITV) and Set-Top Box (STB), Broadcast Schemes for Video-on-Demand, Buffer Management, Further Exploration , Wireless Networks , Multimedia over Wireless Networks , Trends in Wireless Interactive Multimedia	09
V	Multimedia Retrieval: Content-Based Retrieval in Digital Libraries, Minimum three Case studies	09
	Total	45

Text Book/s:
1. Fundamentals of Multimedia 1st Edition by Mark S. Drew & Ze-Nian Li, Pearson Education

Reference Book/s:
1. Multimedia Fundamentals, Volume 1: Media Coding and Content Processing, 2nd Edition by Ralf Steinmetz,
2. Klara Nahrstedt, Pearson Education.
3. Multimedia Making Work (TMH Pub.) by Tay Vaughan.
4. Advanced Multimedia Programming (McGraw Hill Pub.) - Steve Rimmer
5. Digital Image Processing – Gonzalez and Woods, Pearson Education

VII-Semester B. E. (Computer Technology)

Course Code: 7BECT05
Title of the Course: CE-I: Digital Image Processing

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	**Introduction to Image Processing:** Scenes And Images, Application Of Image Processing, Image Processing System (Hardware, Software), Elements of Visual Perception, Structure of the Human Visual System, Image Sensing and Acquisition, Image Sampling and Quantization, Basic Relationship between Pixels, Adjacency, Connectivity, Regions and Boundaries, Logic Operations in Image processing, Image Enhancement in Spatial Domain, Spatial domain Methods, Point processing, Neighbourhood processing, High pass filtering, High-Boost Filtering, Zooming, Image Enhancement based on Histogram Modelling.	09
II	**Discrete Image Transform:** Linear Transformations:Representation of a Discrete Function, Sampling, One dimensional Discrete Transformations, Two dimensional Discrete Linear Transformations , FFT, DCT, DST, Walsh-Hadamard Transform, Walsh transform, Haar transform, Fast algorithm for computing Hadamard transform, Slant transform, K-L Transform, Wavelet Transform and Subband Coding.	09
III	**Image Enhancement in Frequency Domain:** Fourier Transform, One dimensional Fourier Transform, Two dimensional Fourier Transform, Properties of DFT, Low Pass Frequency Domain Filters: Ideal Low Pass Filters, Butterworth Low Pass Filters, Gaussian Low Pass Filters, High Pass Frequency Domain Filters: Ideal High Pass Filters, Butterworth High Pass Filters, Gaussian High Pass Filters, High Boost Filtering, Clipping and Thresholding, Homomorphic Filtering, Relationship between Filtering in the spatial and frequency domain.	09
IV	**Segmentation** : Point, Line and Ege Detection, Computing the Gradient, Finding Gradients using Masks: Roberts Mask, Prewitt and Sobel Operators, Compass Operators, Canny Edge Detector, Edge Linking, Connectivity, Region-based Segmentation, Thresholding, Region Extraction, Image Compression: Fidelity Criteria, Image compression Standards, Huffman Coding, LZW Coding, Run-Length Coding, Predictive Coding, Interpolative coding.	09
V	**Morphological Image processing:** Arithmetic and Logical Operation, Erosion and Dilation, Structuring Elements, Opening and Closing, Hit-or-Miss Transform, Boundary Extraction, Hole(Region) Filling, Thinning, Thickening, Pruning, Morphological reconstruction, Representation and Description: Chain Codes, Polygonal Approximations, Signatures, Medical Axis transform, Moments, Fourier Descriptors, Topological Descriptors, Texture	09
	Total	45

Text Book/s:
1. B. Chanda, D. Datta Mujumdar, "Digital Image Processing And Analysis", PHI , 5th Reprint ISBN-81-203-1618-5
2. R.C. Gonzalez, R.R. Woods, "Digital Image Processing Person Education ", ISBN - 81-7808-629-8

Reference Book/s:
1. William Pratt, "Digital Image Processing", John Willey & Sons Inc. ISBN-9-814-12620-9
2. Anil K. Jain, "Fundamentals Of Digital Image Processing", PHI, ISBN-81-203-0929-4

VII-Semester B. E. (Computer Technology)

Course Code: **7BECT06**
Title of the Course: Operating System

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

	List of Practicals
	Students shall perform 10 practicals
I	Practical no. 1 & 2 should be based on CPU scheduling algorithms like FCFS,SJF,RR, Priority etc for multiprogramming system
II	Practical no. 3&4 should be based on process synchronization problems.
III	Practical no.5 &6 should be based on deadlock detection problems
IV	Practical no. 7 should be based on disk scheduling
V	Practical no. 8, 9 & 10 should be based on memory management.

VII-Semester B. E. (Computer Technology)

Course Code: **7BECT07**

Title of the Course: **Computer Graphics**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

	List of Practicals
	Students should perform 10 Experiments
I	1_{st}, & 2_{nd} Practical should be based on line generation algorithms
II	3_{rd} & 4_{th} Practical should be based on Circle generation Clockwise and Anticlockwise.
III	5_{th} & 6_{th} Practical should be based on Filling Algorithms
IV	7_{th} & 8_{th} Practical should be based on line and polygon Clipping algorithms
V	9_{th} & 10_{th} Practical should be based on 2D & 3D Transformation & Bazier Curves.

VII-Semester B. E. (Computer Technology)

Course Code: **7BECT08**
Title of the Course: Database Management System

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

	List of Practicals
	Students should perform 10 Experiments
I	1st, & 2ndPracticalshould be based on ondesining the database schema,
II	3rd& 4th Practical should be based on implementing referential integrity & functions ,group by clause of SQL.
III	5th& 6thPractical should be based on join operations
IV	7th& 8th Practical should be based on PLSQL procedures and functions
V	9th& 10th Practical should be based on packages and triggers.

VII-Semester B. E. (Computer Technology)

Course Code: **7BECT09**
Title of the Course: **Major Project Literature Review & Presentation**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	02	04	25	25	50

	Major Project Literature Review & Presentation
	In the Major Project Literature Review & Presentation, The Student is expected to carry out the following- 1. Selection of a Major Project Title 2. Extensive Literature Review of the chosen topic 3. Presentation of overall idea about the project in front of a panel of internal experts. On completion of above mentioned activities, the student has to prepare a synopsis and literature review in spiral binding form and has to certify by the dept and should be submitted. The panel of internal experts has to carry out viva voce of the student and has to evaluate the student.

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT01**
Title of the Course: **Compiler Construction**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	**Introduction to Compilor:** Compilers and Translators, why to write compiler, The structure compiler, phases of compiler, bookkeeping, error handling, compiler construction tools, Interpreter and the related issues, Cross compiler, Incremental compiler, Boot strapping, Lexical Analyzer(LEX), LEX specification details.	09
II	**Syntax Analysis Introduction:** Role of parsers & issues of separating lexical & syntax analysis, parsing technique: Top down parser, Predictive parser, Bottom up parsing, LR parse (SLR, CLR & LALR etc), Implementation of LR parser. Automatic constructions of parser (YACC), YACC specification file details.	09
III	**Intermediate code Generation:** Syntax-directed translation schemes, Intermediate code, postfix notation, parse tree and syntax tree, Three address codes, quadruples, triples, translation of assignment statements, Boolean expression, Array references in arithmetic expression, procedure calls, Declaration, case statement.	09
IV	**Symbol Tables:** Contents, Data structure for symbol tables, representing scope information. Error detection and recovery: Error handling: Lexical-phase, Syntactic phase and semantic phase, Code Generation Introduction: Issues in code generation, Target machine, Run-time storage management, Basic blocks and flow graphs, Next-use information, A simple code generator, Register allocation and assignment, The dag representation of basic blocks, Peephole optimization, Generating code from dags.	09
V	**Code Optimization:** Introduction, Principle sources Of Optimization, optimization of basic blocks, Loop in flow graphs, Introduction to global data flow analysis, Iterative solution of data-flow equations, code improving transformation.	09
	Total	45

Text Book/s:
1. A V Aho, R. Sethi, J D Ullman, "Compilers: Principles, Techniques, and Tools", Pearson Education, ISBN 81 - 7758 - 590 - 8
2. Aho & Ullman , Principles of compiler Design.

Reference Book/s:
1. Lex and Yece-O'relly.
2. Dhamdhere. Compiler Construction, McMillan India
3. Muchnlk -Advanced compiler design & Implementation.

VIII-Semester B. E. (Computer Technology)

Course Code: 8BECT02
Title of the Course: Data Warehousing and Data Mining

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	**Data Warehousing**: Basic Concepts, Data Warehouse Design: Architecture, data marts, meta data repository, introduction to ETL process, Multidimensional data analysis, Data Warehouse Modeling: Data Cube, OLAP and OLAP operations, Different OLAP Servers, Data Warehouse Usage.	09
II	**Data Mining** : Need of data mining technique, Introduction to KDD process , A Multi-Dimensional View of Data Mining, Data Mining Functionalities Applications of data mining, classification of data mining techniques, Major Issues in Data Mining,	09
III	**Data objects and Preprocessing :**Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Visualization Measuring Data Similarity and Dissimilarity. Data Preprocessing : Data Cleaning , Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.	09
IV	**Classification and association rule mining:**Classification basics, supervised Vs unsupervised learning, and Prediction. Issues Regarding Classification and Prediction. Classification by Decision Tree Introduction: what is decision tree? Algorithm for Decision Tree Induction, Attribute Selection Measure, Extracting Classification Rules from Trees, Approaches to Determine the Final Tree Size, Enhancements to basic decision tree induction. Association rule mining : Basics, Mining single-dimensional Boolean association rules from transactional databases, Mining multilevel association rules from transactional databasesMining multidimensional association rules from transactional databases and data warehouse.	09
V	**Cluster analysis:** Cluster Analysis: Introduction, applications of clustering, examples of clustering, requirements of clustering in data mining, A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density: Based Methods – Grid: Based Methods – Model: Based Clustering Methods – Clustering , Outlier Analysis.	09
	Total	45

Text Book/s:

1. Jiawei Han and Micheline Kamber ―Data Mining Concepts and Techniques, Third Edition, Elsevier,
2. P. S. Deshpande, Chaudhari, " Multidimentional data analysis and datamining", DreamTech Press
3. Paul Raj Punniah – Data Warehousing Fundamentals for IT professionals. Second edition, WIELLY, John-Wielly and sons.

Reference Book/s:

1. Alex Berson and Stephen J. Smith ―Data Warehousing, Data Mining & OLAP, Tata McGraw – Hill Edition, Tenth Reprint 2007.
2. Arun K.Pujari, Data mining techniques , second edition,Universities Press.2010.
3. G. K. Gupta ―Introduction to Data Mining with Case Studies‖, Easter Economy Edition, Prentice Hall of India, 2006.

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT03**
Title of the Course: **CE-II: Cloud Computing**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	INTRODUCTION: Cloud Computing Introduction, Form, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.	09
II	CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedulesm managing projects, presenting on road.	09
III	USING CLOUD SERVICES: Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.	09
IV	OUTSIDE THE CLOUD: Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis	09
V	STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.	09
	Total	45

Text Books:
1. Enterprise Cloud Computing by Gautam Shroff,Cambridge
2. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009

Reference Books:
1. Google Apps by Scott Granneman Pearson
2. Cloud Security & Privacy by Tim Malhar, S. Kumaraswammy, S. Latif (SPD 'O'-REILLY)
3. Cloud Computing: A Practical Approach, Antohy T Velte, et.al McGraw Hill
4. Cloud Computing Bible by Barrie Sosinsky, Wiley India
5. Stefano Ferretti et.al. QoS aware Clouds", 2010 IEEE 3rd International Conference on Cloud Computing

VIII-Semester B. E. (Computer Technology)

Course Code: 8BECT03

Title of the Course: CE-II : Advanced Database

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	**DATABASE DESIGN ISSUES:** ER Model :Normalization, Security, Integrity,Consistency ,Database Tuning, Optimization and Research Issues, Design of Temporal Databases ,Design of Spatial Databases.	09
II	**DISTRIBUTED DATABASES** Distributed Databases Vs Conventional Databases, Architecture, Advantages, Disadvantages, Fragmentation, Horizontal, vertical, hybrid Replication Top-up design, the allocation problem, Bottom-down design, Data Replication, Data Fragmentation, Transparently Naming & Autonomy, Distributed Query Processing, Recovery, Concurrency Control,Deadlock Handling	09
III	**OBJECT ORIENTED & OBJECT RELATIONAL DATABASES** Introduction to Object Oriented Data Bases – Approaches, Modeling and Design, Persistence, Query Languages, Transaction – Concurrency, Multi Version Locks, Recovery.	09
IV	**EMERGING SYSTEMS** Enhanced Data Models: Client/Server Model, Data Warehousing and Data Mining, Web Databases, Mobile Databases.	09
V	**CURRENT TRENDS** Rules Knowledge Bases, Active and Deductive Databases, Parallel Databases, Multimedia Databases, Image Databases, Text Database, Unstructured Databases, Cloud Computing, Data streaming.	09
Total		45

Text Book/s:
1. R. Elmasri and S.B. Navathe, "Fundamentals of Database ", Pearson Education, 2004.
2. F.Henry Korth, Abraham Silberschatz, S.Sudharshan, " Database System Concepts", Fourth Ediion, Tata Mcgraw Hill, 2002.

Reference Book/s:
1. Elisa Bertino, Barbara Catania, Gian Piero Zarri, "Intelligent Database Systems", Addison-Wesley, 2001.
2. Carlo Zaniolo, Stefano Ceri, Christos Faloustsos, R.T.Snodgrass, V.S.Subrahmanian, "Advanced Database Systems", Morgan Kaufman, 1997.
3. N.Tamer Ozsu, Patrick Valduriez, "Principles Of Distributed Database Systems", PHI, Inc., 1999.
4. Abdullah Uz Tansel Et Al, "Temporal Databases:"Theory, Design And Principles", Benjamin Cummings Publishers, 1993.

VIII-Semester B. E. (Computer Technology)

Course Code: 8BECT03

Title of the Course: CE-II : Distributed System

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	**Introduction:** Definition, Goals, Types of distributed systems: Distributed Computing System, Distributed Information System, Architecture: Architectural, Styles, System Architecture, **Processes and Communication**: Virtualization, Servers, Code Migration, Software Agents, Remote Procedure Call, Message Oriented Transient Communication	09
II	**Synchronization:** Distributed Shared Memory: General architecture, Design and Implementation Issues, Consistency Models, Implementing Sequential Consistency Model, Replacement Strategy, Thrashing, Heterogeneous DSM, Physical Clock Synchronization, Logical Clock, Mutual exclusion, Election Algorithms	09
III	**Distributed File Systems:** Architecture, Processes, Communication, Naming, Synchronization, Consistency and Replication, **Fault Tolerance:** Introduction, Process Resilience, Distributed Commit, Recovery.	09
IV	**Distributed Operating Systems:** Amoeba: Design goals, architecture, process management, file management. Mach: Design goals, architecture, process management, memory management	09
V	**Distributed Multimedia Systems:** Introduction, Characteristics of multimedia data, Quality of service management, Resource management, Stream adaptation, Case study : The Tiger Video file server	09
	Total	45

Reference Books:
1. Distributed Systems Principles and Paradigms- A. S. Tanenbaum (2nd Edition) , Pearson Education
2. Distributed Operating Systems - P. K. Sinha (PHI) (For Distributed shared memory and distributed operating systems)
3. Distributed Systems – Concepts & Design by George Coulouris, Jean Dollimore, Tim Kindberg (Pearson Education)

VIII-Semester B. E. (Computer Technology)

Course Code: 8BECT03

Title of the Course: CE-II : E-Commerce

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
04	00	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	**Introduction to E-Commerce:** Overview, Traditional vs. Electronic Business Transactions, Benefit of Electronic Commerce, Information Technology and Business, Internet structure and growth. Network infrastructure, other Networks.	09
II	**EDI to E-Commerce:** Electronic Data Interchange, The UN/EDIFACT Standard, The Internet and Extranet for E-Commerce, Identification and Tracking tools for Electronic Commerce. Transactions on the Internet, requirements of payment system. Types of electronic payment. Tools for implementation.	09
III	**Security and E-Commerce:** The benefit of Cryptography, The process of Encryption, The working of Public-key Cryptography, The importance of digital Certificates, The Comparison of encryption methods, An overview of Internet Security Systems.	09
IV	**Consumer and Business Markets:** Consumer Demographics, Loyalty and Acceptance, Value chain and the market place. Business evaluation on the internet.	09
V	**Electronic Customer Support:** The web response system and PPI, security and software modules, Submitting and tracking Online Problems, Dividing process to protect corporate Information. The Beginnings of a Virtual Factory: Virtual Co-ordination, Implementation CITIS operations Controlling Access to shared Data and applications. Entrusting access to an intermediatory.	09
	Total	45

Text Book/s:
1. Bajaj & Nag - E-Commerce the cutting edge of business.
2. David Kosiur - Understanding electronics Commerce.

VIII-Semester B. E. (Computer Technology)

Course Code: 8BECT04
Title of the Course: OE-I : Cyber Laws and Ethics

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
02	00	--	02	02	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to Computer Security: Definition, Threats to security, Government requirements, Information Protection and Access Controls, Computer security efforts, Standards, Computer Security mandates and legislation, Privacy considerations, International security activity.	09
II	Secure System Planning and administration, Introduction to the orange book, Security policy requirements, accountability, assurance and documentation requirements, Network Security, The Red book and Government network evaluations.	09
III	Information security policies and procedures: Corporate policies- Tier 1, Tier 2 and Tier3 policies - process management-planning and preparation-developing policies-asset classification policy developing standards.	09
IV	Information security: fundamentals-Employee responsibilities- information classification Information handling- Tools of information security- Information processing-secure program administration	09
V	Organizational and Human Security: Adoption of Information Security Management Standards, Human Factors in Security- Role of information security professionals.	09
	Total	45

Reference Books:

1. Debby Russell and Sr. G. T Gangemi, "Computer Security Basics (Paperback)", 2nd Edition, O' Reilly Media, 2006.
2. Thomas R. Peltier, "Information Security policies and procedures: A Practitioner's Reference", 2nd Edition Prentice Hall, 2004.
3. Kenneth J. Knapp, "Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions", IGI Global, 2009.
4. Thomas R Peltier, Justin Peltier and John blackley," Information Security Fundamentals", 2nd Edition, Prentice Hall, 1996
5. Jonathan Rosenoer, "Cyber law: the Law of the Internet", Springer-verlag, 1997
6. James Graham, "Cyber Security Essentials" Averbach Publication T & F Group.

Course Code: **8BECT04**
Title of the Course: **OE-I : Fundamentals of Management for Engineers**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
02	00	--	02	02	03	10	10	80	100

Unit	Contents	Hours
I	**Introduction to Management:** Evolution of Management, Nature & Scope-Functions of Management Role of Manager-levels of Management-Managerial Skills - Challenges-Planning-Planning Process Types of Plans-MBO	09
II	**Organization Structure & HRM:** Organization Design-Organizational Structure-Departmentation– Delegation-Centralization - Decentralization-Recentralization-Organizational Culture- Organizational climate- Organizational change Human Resource Management-HR Planning - Recruitment & Selection - Training & Development Performance appraisal - Job satisfaction-Stress Management Practices	09
III	**Operation Management:** Introduction to Operations Management-Principles and Types of Plant Layout-Methods of production (Job Batch and Mass production) - Method study and Work Measurement-Quality Management - TQM-Six sigma - Deming's Contribution to Quality - Inventory Management – EOQ - ABC Analysis - JIT System-Business Process Re-engineering (BPR)	09
IV	**Marketing Management:** Introduction to Marketing-Functions of Marketing-Marketing vs. Selling Marketing Mix - Marketing Strategies - Product Life Cycle - Market Segmentation - Types of Marketing - Direct Marketing-Network Marketing - Digital Marketing-Channels of Distribution - Supply Chain Management (SCM)	09
V	**Project Management:** Introduction to Project Management-steps in Project Management - Project Planning - Project Life Cycle-Network Analysis-Program Evaluation & Review Technique (PERT)- Critical Path Method (CPM) - Project Cost Analysis - Project Crashing - Project Information Systems	09
	Total	45

Text Book/s:
1. Management Essentials, Andrew DuBrin, 9e, Cengage Learning, 2012.
2. Fundamentals of Management, Stephen P.Robbins, Pearson Education, 2009.
3. Essentials of Management, Koontz Kleihrich, Tata Mc - Graw Hill.
4. Management Fundamentals, Robert N Lussier, 5e, Cengage Learning, 2013.
5. Industrial Engineering and Management: Including Production Management, T.R.Banga, S.C Sharma, Khanna Publishers.

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT04**

Title of the Course: **OE-I : Entrepreneurship Development**

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
02	00	--	02	02	03	10	10	80	100

Unit	Contents	Hours
I	**Entrepreneurial Perspectives** Introduction to Entrepreneurship – Evolution - Concept of Entrepreneurship - Types of Entrepreneurs - Entrepreneurial Competencies, Capacity Building for Entrepreneurs. Entrepreneurial Training Methods - Entrepreneurial Motivations - Models for Entrepreneurial Development - The process of Entrepreneurial Development.	09
II	**New Venture Creation** Introduction, Mobility of Entrepreneurs, Models for Opportunity Evaluation; Business plans – Purpose, Contents, Presenting Business Plan, Procedure for setting up Enterprises, Central level - Startup and State level - T Hub, Other Institutions initiatives.	09
III	**Management of MSMEs and Sick Enterprises** Challenges of MSMEs, Preventing Sickness in Enterprises – Specific Management Problems; Industrial Sickness; Industrial Sickness in India – Symptoms, process and Rehabilitation of Sick Units.	09
IV	**Managing Marketing and Growth of Enterprises** Essential Marketing Mix of Services, Key Success Factors in Service Marketing, Cost and Pricing, Branding, New Techniques in Marketing, International Trade.	09
V	**Strategic perspectives in Entrepreneurship** Strategic Growth in Entrepreneurship, The Valuation Challenge in Entrepreneurship, The Final Harvest of New Ventures, Technology, Business Incubation, India way – Entrepreneurship; Women Entrepreneurs – Strategies to develop Women Entrepreneurs, Institutions supporting Women Entrepreneurship in India.	09
	Total	45

Text Book/s:
1. Entrepreneurship Development and Small Business Enterprises, Poornima M. Charantimath, 2e, Pearson, 2014.
2. Entrepreneurship, a South – Asian Perspective, D.F. Kuratko and T. V. Rao, 3e, Cengage, 2012.
3. Entrepreneurship, Arya Kumar, 4 e, Pearson 2015.
4. The Dynamics of Entrepreneurial Development and Management, Vasant Desai, Himalaya Publishing House, 2015.

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT06**
Title of the Course: **Compiler Construction**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	02	02	25	25	50

	List of Practicals
	The student is expected to perform practicals based on following topics.
I	Practical no. 1 , 2 & 3 should be based on the Lex
II	Practical no. 4 should be based on Flex.
III	Pr Practical no. 5,6,7 & 8 should be based on Yacc to recognize arithmetic expression, Strings, valid variable ,grammar
IV	Pr Practical no. 9 & 10 should be based on Yacc to evaluate arithmetic expression

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT07**
Title of the Course: **Data Warehousing and Data Mining**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	02	02	25	25	50

	List of Practicals
	Practical's of Data warehousing and data mining shall be based on syllabus. Software's like Oracle, MatLab and open source tools like Weka can be used for implementation of practicals. **Practical:** Students should perform 08-10 Experiments from the given list.
I	Practical 1 and 2 will be on unit I (Data Warehousing)
II	Practical 3 will be on unit II (Study of Open source tools like Weka)
III	Practical 4, 5 and 6 will be on unit III (Study of any data set, Data similarity dissimilarity, statistical analysis of data.)
IV	Practical 7 and 8 will be on unit IV (Classification algorithm and association rule mining algorithm)
V	Practical 9 and 10 will be on unit V (clustering algorithms)

VIII-Semester B. E. (Computer Technology)

Course Code: **8BECT08**
Title of the Course: **Major Project**

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
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	Major Project Work
	As the Major Project topic has already been chosen and Literature Review of Project has also been completed in Seventh Semester under Major Project Literature Review and Presentation, The Student is expected to carry out the following- 1. Formulation of Scope & Methodology for the proposed study. 2. Implementation of project work 3. Carry out necessary experimention for analysis and testing of the project work On completion of above mentioned activities of project work, the student has to prepare a project report in the specified format and deliver a seminar on project work before final submission. Evaluation of project work will be on the basis of quality of work carried out, submitted Report, Seminar & Viva-Voce.