

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Absorbition Scheme for New course(C. B. S.) to Old course of Eighth Semester
B. E. (Information Technology)

**As per Old course scheme of RTM,
Nagpur University**

**As per New course (C. B. S.)scheme of RTM,
Nagpur University**

Sl. No	Sub Code	Subjects	Th/Pr	Subject Code	Subjects	Th/Pr
1	-----	-----	-----	BEIT801T	Distributed Systems	Th
2	-----	-----	-----	BEIT801P	Distributed Systems	Pr
3	-----	-----	-----	BEIT802T	Gaming Architecture and Programming	Th
4	-----	-----	-----	BEIT802P	Gaming Architecture and Programming	Pr
5	8IT50	Elective-I Real Time Systems	Th	BEIT803T1	Elective-III Embedded Systems	Th
6	7IT45	Elective-II Digital Image Processing	Th	BEIT803T2	Elective-III Digital Image Processing	Th
7	8IT51	Elective-II Pattern Recognition	Th	BEIT803T3	Elective-III Pattern Recognition	Th
8	7IT45	Elective-II Fuzzy System and Neural Networks	Th	BEIT803T4	Elective-III Machine Learning	Th
9	-----	-----	-----	BEIT804T1	Elective-IV Cyber Security	Th
10	-----	-----	-----	BEIT804T2	Elective-IV Cloud Computing	Th
11	8IT49	E-Commerce	Th	BEIT804T3	Elective-IV E-Commerce and Enterprise Resource Planning	Th
12	8IT50	Elective-I Enterprise Resource Planning	Th			
13	8II50	Elective-I Fibre Optical Communication	Th	BEIT804T4	Elective-IV Wireless Sensor Networks	Th
14	8IT52	Project	Pr	BEIT805P	Project	Pr
15	8IT50	Elective-I Modelling and Simulation	Th	-----	-----	-----
16	8IT51	Elective-II Advanced Microprocessor	Th	-----	-----	-----
17	8IT51	Elective-II Parallel Processing	Th	-----	-----	-----
18	8IT47	Distributed Databases and Object Oriented Databases	Th	-----	-----	-----
19	8IT47	Distributed Databases and Object Oriented Databases	Pr	-----	-----	-----
20	8IT48	Web Technologies	Th	-----	-----	-----
21	8IT48	Web Technologies	Pr	-----	-----	-----
22	8IT51	Elective-II Mobile Communication	Th	-----	-----	-----

Members,
BOS (CE/IT)

Chairman,
BOS (CE/IT)

BEIT801T

DISTRIBUTED SYSTEMS

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction: Distributed Computing Models, Software Concepts, Hardware Concepts, The Client-Server model, Issues in design of a distributed operating system.

UNIT II:

COMMUNICATION: Introduction to Message Passing, Advantages and features of message passing, Message format, Message Buffering, Remote Procedure Call, Extended RPC Models, Remote Object Invocation, Message Oriented Communication.

UNIT III:

Processes And Synchronization: Threads, code migration, clock synchronization, logical clocks, global state, Election algorithms, mutual exclusion, Distributed transaction.

UNIT IV:

Distributed Deadlock Detection: System model, Resources vs. communication deadlocks, deadlock prevention, avoidance, detection and resolution, Centralized deadlock detection, distributed deadlock detection, path pushing and edge chasing algorithm

UNIT V:

Distributed Shared Memory: Introduction, General architecture of distributed shared memory, Design and implementation, Issues of DSM, Granularity, structure of shared memory space, consistency models, thrashing, advantages of DSM

UNIT VI:

Distributed File System: Introduction, Desirable features of good distributed file system, file models, file accessing, sharing, caching methods, file replication, fault tolerance, Case Study: CORBA(CORBA RMI and Services)

Text Books:

1. Andrew Tanenbaum, Maarten Van Steen, "Distributed System- Principals Paradigm", PHI Publication.
2. Singhal and Shivratri, "Advanced Concept in Operating Systems", McGraw Hill.

BEIT801P

DISTRIBUTED SYSTEMS

(Practical Credit: 01)

Teaching Scheme:

Practical: 2 Hours/week

Examination Scheme:

Practical: P (U): 25 Marks P (I): 25 Marks

Duration of University Exam. : 02 Hours

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Note:

1. Practicals are based on DISTRIBUTED SYSTEMS syllabus (subject code: BEIT801T)
2. There should be at the most two practicals per unit

BEIT802T

GAMING ARCHITECTURE AND PROGRAMMING

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Core Design: What Is a Game? Games Aren't Everything. Games Mean Gameplay. Creating the Game Spec. Example Game Spec, Initial Design: The Beginning. Hardware Abstraction. The Problem Domain. Thinking in Tokens.

UNIT II:

Use of Technology: The State of the Art. Blue-Sky Research. Reinventing the Wheel. Use of Object Technology, Building Bricks: Reusability in Software, Initial Architecture Design: The Birth of Architecture. The Tier System. Architecture Design.

UNIT III:

Development: The Development Process. Code Quality. Coding Priorities. Debugging and Module Completion. The Seven Golden Gambits. The Three Lead Balloons. GAME PROGRAMMING: Technologies: Display, Mixing 2D and 3D, DirectX, User Interface code, Resource caching, the main loop.

UNIT IV:

Design Practices: Smart & naked pointers, using memory correctly, Game scripting languages, Building your game: Creating a project, source code repositories and version control, Building the game and scripts, User interface programming and input devices: Getting the Device State, Working with the Mouse (and Joystick), Working with the Keyboard, User Interface Components, More Control Properties.

UNIT V:

2D Drawing and DirectX:

2D Drawing and DirectX, Basic 2D Drawing Concepts, Drawing Text, Working with Sprites, Graphics File Formats, Initialization and the Main Loop: Initialization, Some C++ Initialization Pitfalls, Initializing your Game, the Main Loop, Stick the Landing: A Nice Clean Exit.

UNIT VI:

Loading and Caching Game Resources:

Art and Sound Formats, Resource Files, Data Compression, IPac: A Resource File Builder, the Resource Cache, World Design and Cache Prediction, 3D Graphics and 3D Engines: 3D Graphics Pipeline, Setting Up a Project, Using a Scene Graph, 3D Middleware Review, Rolling Your Own 3D Engine.

Text Books:

1. Game Architecture and Programming, Shankarmani, Jain, Sinha, Wiley Publication, India
2. Fundamentals of Game Design, 3rd Edition, Ernest Adams, Pearson Publication

Reference Books:

1. Game Theory: An Introduction, E. N. Barron, Wiley Student Edition.
2. ActionScript 3.0 Game Programming University, 2nd Edition, Gary Rosenzweig, Pearson Education.
3. "Game Architecture and Design", Andrew Rollings and Dave Morris
4. "Professional Game Programming" Mike McShaffry, Dreamtech Press.

BEIT802P

GAMING ARCHITECTURE AND PROGRAMMING

(Practical Credit: 01)

Teaching Scheme:

Practical: 2 Hours/week

Examination Scheme:

Practical: P (U): 25 Marks P (I): 25 Marks

Duration of University Exam. : 02 Hours

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Note:

1. Practicals are based on GAMING ARCHITECTURE AND PROGRAMMING syllabus (subject code: BEIT802T)
2. Students are suggested to choose at least One game idea, possibly:
 1. Single player (Puzzle, Educational, Strategy etc.)
 2. Multiplayer (Adventure, fighting, sports etc.)Then work on both the ideas covering following aspects:
 1. Feasibility and Design
 2. Planning for each stage with objective to achieve.
 3. Technical Architecture
 4. Component building
 5. Integration and testing
 6. Complexity level
 7. Review (This can taken from other students of same class or junior class).
3. Following are the Open Source Game Engine Tools recommended for implementation.
 1. GDevelop
 2. PlayCanvas
 3. Unity
 4. Aleph One
 5. Adventure Game Studio
 6. Crystal Space
 7. Delta 3D
 8. Game Play 3D and many more

ELECTIVE: III

BEIT803T1

EMBEDDED SYSTEMS

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction to Embedded System:

Introduction, Embedded system vs General computing system, History of embedded system, Processor embedded into a system, Embedded hardware units and devices in a system, Embedded software in a system, examples in a embedded system, Embedded SoC, Complex system design and processors, Design process in ES, Formalization of system design, Classification of Es, Skills required in Embedded system design, Characteristics and quality attributes of Embedded system.

UNIT II:

Embedded System Design:

Hardware and Software design, Co-design, Embedded Software development Tools: In Circuit Emulators, Cross compilers, cross assemblers and tool chain, linker locator, Address resolution, PROM programmer, Rom Emulator. Memories: EPROM, PROM, Flash.

UNIT III:

RTOS for Embedded System:

Architecture of the kernel, Tasks and Task Scheduler, Threads , ISR, Multiprocessing and Multitasking, Semaphore and Shared Data, Mutex, Mailboxes, Message Queue, Events, Pipes, Timers, Signals, Memory Management, RTOS Task Scheduling Models, Interrupt Latency, Response of the task, OS Security issues, Introduction to Android.

UNIT IV:

Devices and Communication:

Serial Communication devices, Parallel device port, Buses: I²C, UART, USART, CAN Bus, Devices: Wireless Devices, Timer and Counting Devices, Watch Dog Timer, Real Time Clock, Network Embedded System.

UNIT V:

Programming for Embedded System:

Software programming in assembly language (ALP) and High Level language 'C', C program element: Header and Source Files, Preprocessor Directives, Macros and Functions, Data Types, Data Structures, Modifiers, Statements, Loops and Pointers, Object Oriented Programming, Embedded Programming in C++, Embedded Programming in Java.

UNIT VI:

Microcontroller 8051:

Introduction, Architecture, Memory Management, Addressing Modes and Instruction Sets, I/O Ports, Timers/Counters, Routing Interface with OS, Wireless Communication Protocol, Routing Methodologies

Text Books:

1. Embedded System Architecture, Programming and Design by Raj Kamal, 3rd Edition TMH.
2. Introduction to Embedded System by Shibu K. V. 3rd Edition TMH.
3. The 8051 Microcontroller Based Embedded System By Manish K. Patel TMH.
4. An Embedded Software Primer by David E. Simon (Pearson Edu. Asia).
5. 8051 Microcontroller and Embedded System by Muhammad Ali Mazidi, Janice Mazidi, Janice Gillispie Mazidi, Pearson Edition.
6. Embedded / Real Time Systems: Concepts, Design and Programming (Black Book) By Dr. K. V. K. K. Prasad Dreamtech Press.
7. Embedded Systems Engineering, C. R. Sarma, University Press.

ELECTIVE: III

BEIT803T2

DIGITAL IMAGE PROCESSING

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

DIGITAL IMAGE FUNDAMENTALS

Elements of digital image processing systems, Vidicon and Digital Camera working principles, Elements of visual perception, brightness, contrast, hue, saturation, mach band effect, Image sampling, Quantization, dither, Two-dimensional mathematical preliminaries, 2D transforms - DFT, DCT, KLT, SVD.

UNIT II:

IMAGE ENHANCEMENT

Histogram equalization and specification techniques, Noise distributions, Spatial averaging, Directional Smoothing, Median, Geometric mean, Harmonic mean, Contra harmonic mean filters, Homomorphic filtering, Color image fundamentals - RGB, HSI models, Color image enhancement.

UNIT III:

IMAGE RESTORATION

Image Restoration - degradation model, unconstrained restoration - Lagrange multiplier and constrained restoration, Inverse filtering-removal of blur caused by uniform linear motion, Wiener filtering, Geometric transformations-spatial transformations.

UNIT IV:

IMAGE SEGMENTATION

Edge detection, Edge linking via Hough transform, Thresholding, Region based segmentation, Region growing, Region splitting and merging, Segmentation by morphological watersheds, basic concepts, Dam construction, and Watershed segmentation algorithm.

UNIT V:

IMAGE COMPRESSION

Need for data compression, Huffman, Run Length Encoding, Shift codes, Arithmetic coding, Vector Quantization, Transform coding, JPEG standard, MPEG

UNIT VI:

FEATURE EXTRACTION

Representation, Topological Attributes, Geometric Attributes Description, Boundary-based Description, Region-based Description, Relationship, Object Recognition, Deterministic Methods, Clustering, Statistical Classification, Syntactic Recognition, Tree Search, Graph Matching.

Text Books:

1. Rafael C. Gonzalez, Richard E. Woods, Digital Image Processing, Pearson Education, Third Edition, 2008.
2. Anil K. Jain, Fundamentals of Digital Image Processing', Pearson 2002.

Reference Books:

1. Kenneth R. Castleman, Digital Image Processing, Pearson, 2006
2. Rafael C. Gonzalez, Richard E. Woods, Steven Eddins,' Digital Image Processing using MATLAB', Pearson Education, Inc., 2004.
3. D. E. Dudgeon and RM. Mersereau, Multidimensional Digital Signal Processing', Prentice Hall Professional Technical Reference, 1990.
4. William K. Pratt, Digital Image Processing' , John Wiley, New York, 2002
5. Milan Sonka et al, 'IMAGE PROCESSING, ANALYSIS AND MACHINE VISION', Brookes/Cole, Vikas Publishing House, 2nd edition, 1999,

ELECTIVE: III

BEIT803T3

PATTERN RECOGNITION

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Pattern Classifier: Overview of Pattern recognition, Discriminant functions, supervised learning, parametric estimation, Maximum Likelihood Estimation,

UNIT II:

Bayes Classifier: Bayesian parameter Estimation, Problems with Bayes approach, Pattern classification by distance functions, Minimum distance pattern classifier.

UNIT III:

Clustering: Clustering for unsupervised learning and classification Clustering concept, C Means algorithm, Hierarchical clustering, Graph theoretic approach to pattern Clustering, Validity of Clusters.

UNIT IV:

Feature Extraction and Structural Pattern Recognition: KL Transforms, Feature selection through functional approximation, Binary selection, Elements of formal grammars, Syntactic description, stochastic grammars, Structural representation.

UNIT V:

Hidden Markov model and Support Vector Machine: State machine, Hidden Markov model, Training, Classification, Support vector machine, Feature Selection.

UNIT VI:

Recent Advances:

Fuzzy logic, Fuzzy Pattern Classifier, Pattern classification using genetic algorithms, Case study using Fuzzy pattern classifier and perception

Text Books:

1. M. Narasimha Murthy and V. Susheela Devi, "Pattern Recognition", Springer 2011
2. S. Theodoridis and K. Koutroumbas, "Pattern Recognition", 4th Ed., Academic Press, 2009.
3. Robert J. Schalkoff, "Pattern Recognition Statistical, Structural and Neural Approaches", John Wiley and Sons Inc., New York, 1992.
4. C. M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006.

ELECTIVE: III

BEIT803T4

MACHINE LEARNING

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction:

Machine Learning, Machine Learning Foundations, Overview, applications, Types of machine learning, basic concepts in machine learning, Examples of Machine Learning , Applications, Linear Models for Regression, Linear Basis Function Models, The Bias, Variance Decomposition, Bayesian Linear Regression, Bayesian Model Comparison

UNIT II:

Supervised Learning:

Linear Models for Classification, Discriminate Functions, Single layer neural network, linear separability, general gradient descent, perceptron learning algorithm, multi-Layer perceptron: two-layers universal approximations, back propagation learning, important parameters, Margin of a classifier, dual perceptron algorithm, learning non-linear hypotheses with perceptron.

UNIT III:

Unsupervised Learning: Clustering, K-means, EM, Mixtures of Gaussians, The EM Algorithm in General, Model selection for latent variable models, high-dimensional spaces, The Curse of Dimensionality, Dimensionality Reduction, Factor analysis, Principal Component Analysis, Probabilistic PCA, Independent components analysis. Neural Networks, Feed-forward Network Functions, Error Back, propagation, Regularization , Mixture Density and Bayesian Neural Networks, Kernel Methods, Dual Representations , Radial Basis Function Networks. Ensemble methods, Bagging, Boosting

UNIT IV:

Instance-Based Learning:

Nearest neighbor classification, k-nearest neighbor, nearest neighbor error probability Machine, Machine learning concepts and limitations: Learning theory, formal model of the learnable, sample complexity, learning in zero-bayes and realizable case, VC-dimension, fundamental algorithm independent concepts, hypothesis class, target class, inductive bias, Occam's razor, empirical risk, limitations of inference machines, approximation and estimation errors, Tradeoff.

UNIT V:

Support Vector Machine (SVM): Kernel functions, implicit non-linear feature space, theory, zero-Bayes, realizable infinite hypothesis class, finite covering, margin-based bounds on risk, maximal margin classifier. Machine learning assessment and Improvement: Statistical model selection, structural risk minimization, bootstrapping, bagging, boosting.

UNIT VI:

Advanced Learning:

Sampling, Basic sampling methods, Monte Carlo, Reinforcement Learning, K-Armed Bandit-Elements, Model-Based Learning, Value Iteration, Policy Iteration. Temporal Difference Learning, Exploration Strategies, Deterministic and Non-deterministic Rewards and Actions, Eligibility Traces, Generalization, Partially Observable States, the Setting-Example, Semi - Supervised Learning. Computational Learning Theory: Mistake bound analysis, sample complexity analysis, VC dimension. Occam learning, accuracy and confidence boosting

Text Books:

1. Machine Learning – Tom M. Mitchell, - MGH
2. Ethem Alpaydin, "Introduction to Machine Learning", Prentice Hall of India, 2005

Reference Books:

1. Christopher Bishop, "Pattern Recognition and Machine Learning" Springer, 2006
2. Kevin P. Murphy, "Machine Learning: A Probabilistic Perspective", MIT Press, 2012
3. Stephen Marsland, "Machine Learning –An Algorithmic Perspective", CRC Press, 2009

ELECTIVE: IV

BEIT804T1

CYBER SECURITY

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction: Cyber Crime; definitions, An origin of the Word, cyber crime - and information security, who are criminals? classification of cyber crimes; email spoofing, spamming, cyber defamation, internet time theft, salami attack or salami technique, data diddling, forgery, web jacking, news group spam or crimes emanating from usenet NewsGroup, Industrial spying or Industrial Espionage, hacking, online fraud, Pornography offenses, software piracy, Computer Sabotage, email bombing, mail bombs, usenet NewsGroup as a source of cyber crimes, computer network intrusion, password sniffing, credit card fraud, identity theft.

UNIT II:

Introduction, categories of cyber crime, how criminals plan the attack:

Reconnaissance, passive and active attacks, scamming/scrutinizing gathered information, attack (Gaining and maintaining the system access, Social engineering, classification of social engineering, cyber stalking, types of stalkers, cases reported on cyber stalking, how stalking works? Real life incidents of cyber stalking, cyber cafe and cyber crimes, fuel for cyber crimes, Botnet, attack vector, cloud computing: why cloud computing? types of services, cyber crime and cloud computing.

UNIT III:

Cyber crime: Mobile and wireless devices: Introduction proliferation of mobile and wireless devices trained in mobility, credit card fraud in mobile and wireless computing era - types and technique of credit card fraud, security challenges posed by mobile devices, registry selling for mobile devices, authentication service security - cryptographic security for mobile devices, LDAP security for handheld mobile computing devices, RAS security for mobile devices, Media player control security, networking API security for mobile computing applications, attacks on mobile phone - mobile phone theft, mobile viruses, phishing, vishing, hacking Bluetooth mobile devices, security implications for organizations, managing diversity and proliferation of hand-held devices, unconventional or stealth storage devices threats through cost and stolen devices. Protecting data on lost devices educating the laptop user, organizational measures of handling mobiles, device related security issues, organizational security policies and measures in mobile computing era.

UNIT IV:

Tools and methods used in Cyber crime: Introduction proxy servers and anonymizers phishing, password cracking - online attacks, offline attacks, strong, weak and random password, random password, key loggers and spywares: s/w key loggers hardware key loggers, anti loggers, spywares, virus and worms, types of virus, Trojan horse and

backdoors: backdoors, protection from Trojan horse, steganography, DoS and DDos attacks, SQL injection buffer overflow, attacks on wireless networks.

UNIT V:

Phishing and Identity theft: Introduction, phishing - methods of phishing, phishing techniques, spear phishing, types of phishing scams, phishing toolkit and spy phishing, phishing counter measures, Identity theft (ID theft) - Personally Identifiable Information (PII), types of identity theft, techniques of ID theft, Identity theft: counter measures, how to efface your Identity.

UNIT VI:

Cybercrime AND Cyber-security: The legal perspectives - Introduction, cybercrime and the legal landscape around the world, why do we need cyber laws: Indian context, The Indian Act, challenges of Indian law and cyber crime scenario in India, consequences of not adverting the weakness in Information Technology ACT, digital signature and the Indian ACT, Amendments to the Indian ACT, cybercrime and punishment, cyber laws, technology and student: Indian Scenario.

Text Books:

1. Naina Godbole, Sunil Belapure, "Cyber Security - Understanding Cybercrime, Computer forensic and legal perspective", Wiley India Pvt. Ltd.

Reference Books:

1. Thomas J. Mowbray, "Cyber security Managing systems- Conducting, Testing and Investigating Intrusion", Wiley

ELECTIVE: IV
BEIT804T2

CLOUD COMPUTING
(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Defining Cloud Computing: Cloud computing in a nutshell, cloud type - NIST Model, cloud cube model, deployment model, service model, Characteristics of cloud computing, cloud computing stack, open stack.

UNIT II:

Understanding Services and Virtualization Technology:

Understanding services and applications, defining Infrastructure as a Service (IaaS), Platform as a service, Software as a Service, Identity as a Service, Compliance as a Service, Using virtualization technologies, Load balancing and virtualization, understanding Hypervisors, understanding machine Imaging, porting applications, Salesforce.com versus Force.com, SaaS versus PaaS.

UNIT III:

Using Cloud Platform:

Using Google web services, using Amazon web services, using Microsoft cloud services, Aneka integration of private and public cloud

UNIT IV:

Cloud Migration:

Broad approaches to migration, seven steps model of migration, mobbing applications to the cloud, Applications in the cloud, Application in cloud API

UNIT V:

Cloud Security and Storage:

Securing the cloud, securing data, working with cloud based storage - measuring the digital universe, provisioning cloud storage, Exploring cloud back-up solutions

UNIT VI:

Cloud Computing Tools and Future Cloud:

Open source cloud computing platform - Eucalyptus, Open Nebula, Programming in the cloud Map Reduce Dryad. Future cloud - Future trends in cloud computing, defining the mobile market, using Smart phones with the cloud.

Text Books:

1. "Cloud Computing Bible", Barrie Sosinsky; Wiley India Pvt. Ltd.
2. "Cloud Computing - Principals and Paradigms", Rajkumar Buyya, James Broberg, Andrzej Goscinski; Wiley India Pvt. Ltd.
3. Cloud Computing, A Hands on Approach, Bahga, Madisetti, University Press,
4. "Mastering Cloud Computing", Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi, Tata McGraw Hill.

Reference Books:

1. "Cloud Computing - A practical approach for learning and implementation", A. Shrinivasan, J. Suresh; Pearson
2. "Cloud Computing - Fundamentals, Industry approach and trends", Rishabh Sharma; Wiley India Pvt. Ltd.

ELECTIVE: IV

BEIT804T3

E-COMMERCE AND ENTERPRISE RESOURCE PLANNING

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT 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 solutions do you need? Marketing smarts, hosting services, basic packages, midrange package, enterprise solutions for large firms.

UNIT II:

Business to Business Electronics-commerce: Inter-organizational transactions, electronics markets, electronic data interchange (EDI), EDI-technology, EDI and business, inter organizational e-com. Business to consumer electronic commerce: consumer trade transactions, the elements of e-commerce- elements, e-visibility, the e-shop, online payment, delivering the goods, after sales service, internet e-com security, a website evolution mode.

UNIT III:

Electronics payment system: The basics of electronic payment systems. Electronics cash, electronics 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.

UNIT IV:

Introduction to ERP: ERP: An Overview, Enterprise – An Overview, ERP architecture, ERP 2 tier and 3 tier Architecture, Benefits of ERP, Risks of ERP, ERP and Related Technologies, Business Process Reengineering (BPR), Data Warehousing, Data Mining, OLAP, SCM, CRM

UNIT V:

ERP Implementation Lifecycle, Implementation Methodology, ERP project Teams, Vendors, Consultants and Users, Contracts with Vendors, Consultants and Employees, Project Management and Monitoring , Success and Failure Factors of an ERP Implementation.

UNIT VI:

The Business Module: Business Modules of an ERP package, Finance, Manufacturing Human Resources, Plant maintenance, Materials Management, Quality management Sales and Distribution, Case study for Architecture and integration of SAP ERP, ERP PRESENT AND FUTURE :-ERP and e-Commerce, ERP Internet and WWW, ERP and E-Business

Text Books:

1. E-Commerce by David Whitely (McGraw Hill Pub.)
2. Electronics-Commerce by Gary P. Schneider and James T. Perry. (COURSE TECHNOLOGY Thomson Learning)
3. Alexis Leon, "ERP Demystified", Tata McGraw Hill, New Delhi, 2000
4. E-business and E-commerce management strategy, implementation and practice, 5th Edition, Dave Chaffey, Pearson Education
5. Enterprise Resource Planning by Parag Diwan and Sunil Sharma (Pentagon Press.)

Reference Books:

1. Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning – Concepts and Practice", PHI, New Delhi, 2003
2. Business on the net by K. N. Agarwal, A. Lal, Deekjha Agarwal (Macmillan Pub.)
3. The Architecture of SAP ERP: Understand how successful software works by Jochen Boeder, Bernhard Groene

ELECTIVE: IV
BEIT804T4

WIRELESS SENSOR NETWORKS
(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction to wireless Sensor Network:

Network Characteristics, Network application, Network design challenges, Sensor network architectural elements, WSN standards, IEEE 802.15.4, Zig-bee.

UNIT II:

Basic Wireless Sensor Technology:

Sensor node structures, Sensor network architecture, Classification of WSN, Protocol Stack for WSN.

UNIT III:

Medium Access Control:

Fundamental MAC Protocol, MAC design for WSN, S-MAC, DS-MAC, MS-MAC, Traffic adaptive medium access, Self organizing MAC.

UNIT IV:

Routing in WSN:

Data dissemination and gathering, Routing challenges and design issues in WSN, Routing strategies, Flooding and it's variants, Low energy adaptive clustering, Geographical routing.

UNIT V:

Transport Protocol:

Traditional transport protocol, Transport protocol design, Authenticity: Message authentication code, Signature, Authenticating public key, Broadcast and Multicast authentication.

UNIT VI:

Network Management and Operating System for WSN:

Traditional network management models, network management design issues, Example of management architecture: MANNA, Operating system design issues, Operating System: Tiny OS, Mate OS, Magnet OS.

Text Books:

1. Kazem Sohraby, Daniel Minoli, Taieb Znati, "Wireless Sensor Networks Technology, Protocols & Application", Wiley Student Edition
2. Jun Zheng, Abbas Jamalipour, "Wireless Sensor Network, A Network Perspective", Wiley Student Edition.

References Books:

1. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks, Theory and Practice", Wiley Student Edition.

BEIT805P

PROJECT
(Practical Credit: 04)

Teaching Scheme:
Practical: 2 Hours/week

Examination Scheme:
Practical: P (U): 75 Marks P (I): 75 Marks
Duration of University Exam. : 02 Hours

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Note:

1. The topic of the project decided in seventh semester should be considered and extended to implementation and testing phases.
2. The research paper publication / presentation in reputed national and international journals / conferences should be given some weightage while evaluation.
3. The project report should be written using technical research writing tools (e.g. Latex) and submitted to the department for internal as well as external evaluation.
