Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Cryptography and Network Security**	**Code:**	**D033711(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course Objectives:
- To understand the principles and practices of cryptography and network security
- To understand the practical applications that have been implemented and are in use to provide network security

UNIT I	**INTRODUCTION:** Security trends , Legal, Ethical and Professional Aspects of Security, Need for Security at Multiple levels, Security Policies , Model of network security , Security attacks, services and mechanisms , OSI security architecture , Classical encryption techniques: substitution techniques, transposition techniques.
UNIT II	**Symmetric Ciphers:** MATHEMATICS OF SYMMETRIC KEY CRYPTOGRAPHY: Algebraic structures , Modular arithmetic, Euclid's algorithm, Congruence and matrices , Groups, Rings, Fields, Finite fields, SYMMETRIC KEY CIPHERS: DES , Block cipher Principles of DES , Strength of DES , Differential and linear cryptanalysis , Block cipher design principles , Block cipher mode of operation , Evaluation criteria for AES , Advanced Encryption Standard , RC4 , Key distribution.
UNIT III	**Asymmetric (Public Key) Ciphers:** MATHEMATICS OF ASYMMETRIC KEY CRYPTOGRAPHY: Primes , Primality Testing , Factorization , Euler's totient function, Fermat's and Euler's Theorem , Chinese Remainder Theorem , Exponentiation and logarithm , ASYMMETRIC KEY CIPHERS: RSA cryptosystem , Key distribution , Key management , Diffie Hellman key exchange , Elliptic curve arithmetic, Elliptic curve cryptography.
UNIT IV	**Asymmetric Ciphers (continued):** Message Authentication and Hash functions: Authentication requirement , Authentication function , MAC , Hash function , Security of hash function and MAC , SHA ,Digital signature and authentication protocols , DSS, Authentication applications , Kerberos, X.509
UNIT V	**Network Security applications**: Authentication applications: Electronic mail security: PGP, S/MIME. Overview of IP Security. Web Security: Web security considerations, SSL and TLS, Secure electronic transaction. System Security: Intruders, Intrusion detection, password management, viruses and related threats, virus counter measures.

Text books:

1. Cryptography and Network Security: Principles and Practice" by William Stallings, Pearson Education, Prentice Hall, 4th Edition.
2. Cryptography and Network Security, Atul Kahate, McGraw Hill Education (India) Private Limited; Third edition.

REFERENCES:

1. Applied Cryptography: Protocols & Algorithms, Schneier & Bruce, MGH International.
2. Cryptography and Security , by Dr T R Padmanabhan N Harini , Wiley India Pvt Ltd, 2011.
3. Handbook of Applied Cryptography" by Alfred J Menezes and Scott A Vanstone.
4. Cryptography and Network Security" by Behrouz A Forouzan and Debdeep Mukhopadhyay.
5. Network Security: The Complete Reference, Tata McGraw-Hill Education, by Roberta Bragg, Mark Rhodes-Ousley, Keith Strassberg.

Course Outcome: After successful completion of this course, the students will be able to explain

1. Conventional encryption algorithms for confidentiality and their design principles

2. Public key encryption algorithms and their design principles

3. Use of message authentication codes, hash functions , digital signature and public key certificates

4. Network security tools and applications

5. System-level security issues like threat of and countermeasures for intruders and viruses, and the use of firewalls and trusted systems.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Cloud Computing**	**Code:**	**D033712(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35
Course Objectives: • Introduce concepts of cloud computing • Identify various security issues in cloud computing • Understand Various models of cloud computing with their applications. • Learning the principles of virtualization technologies and cloud computing. • Emphasizes on how to apply and build cloud infrastructure in practice.			
UNIT I	**Introduction to Cloud Computing:** The Emergence of Cloud Computing, Cloud Based Service Offerings, Benefits of using a Cloud Model, Key Characteristics of Cloud Computing, Understanding- Public & Private cloud environments, The Evolution of Cloud Computing, Hardware & Internet Software Evolution. Cloud Computing Overview Origins of Cloud computing, Cloud components - Essential characteristics, On-demand self-service, Broad network access, Comparing cloud providers with traditional IT service providers.		
UNIT II	**Cloud Security Challenges & The MSP Model**: Software-as-a-Service, Security Management People, Security Governance, Security Portfolio Management, Security Architecture Design, Identity Access Management (IAM), Data Security. Evolution from the MSP Model to Cloud Computing and Software-as-a-Service, The Cloud Data Centre, Basic Approach to a Data Centre-Based SOA, Open Source Software, Service- Oriented Architectures as a Step Toward Cloud Computing.		
UNIT III	**Cloud Insights Architectural influences:** High-performance computing, Utility and Enterprise grid computing, Cloud scenarios, Benefits: scalability, simplicity, vendors, security, Limitations, Sensitive information - Application development- security level of third party - security benefits, Regularity issues: Government policies		
UNIT IV	**Cloud Storage Management& Building Cloud Networks**: Concept of Virtualization and Load Balancing. Overview on Virtualization used for Enterprise Solutions. Key Challenges in managing Information. Identifying the problems of scale and management in big data. Designing and Implementing a Data Centre-Based Cloud Installing Open Source Cloud service. Amazon Web Services (AWS). Google Cloud Platform.		
UNIT V	**Virtualization concepts & Smartphone:** Virtualization benefits, Hardware virtualization, Software Virtualization, Memory Virtualization, Storage Virtualization, Data Virtualization, Network Virtualization, Virtualization Security Recommendations, Introduction to Various Virtualization OS VMware, KVM, Virtual Machine Security, Smartphone, Mobile Operating Systems for Smartphone's (iPhone, Windows Mobile), Google(Android) Blackberry, Ubuntu Mobile Internet.		

Text books:

1. Toby Velte, Anthony Vote and Robert Elsenpeter, "Cloud Computing: A Practical Approach", McGraw Hill, 2002.

REFERENCES:

1. George Reese, "Cloud Application Architectures: Building Applications and   Infrastructures in the Cloud", O'Reilly Media, 2003.
2. Tim Matherm, Subra Kumara swamy and Shahed Latif, "Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance", O'Reilly Media, 2005.

Course Outcome: At the completion of the course a student will be able to,

1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing.

2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.

3. Elucidate the core issues of cloud computing such as security, privacy, and interoperability.

4. Provide the appropriate cloud computing solutions and recommendations according to the applications used.

5. Implement Hardware/Software verification concept & smart phone activities.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Enterprise Resource Planning (ERP)**	**Code:**	**D033713(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

	Course Objectives: • Understand the technical aspects of ERP systems; • Learn concepts of reengineering and how they relate to ERP system; • Understand the steps and activities in ERP implementation; • Understand the typical functional modules in ERP system; • Understand the technology areas of ERP and enterprise applications.
UNIT I	Definition, Need, Evolution, Benefits, Emerging Trends, Roll of the enterprises, business function and business processes, Risk of ERP, Justifying Investment, Common Myths, Life Cycle, Methodology for Implementation, Cost of Implementation.
UNIT II	**Selection-**A Two Step Process, Roles and Responsibilities of Different Project Team Members, Core Team Selection, Consultant Selection, Requirement Gathering Process; BPR: Pros and Cons, Redesign, Reengineering, Benchmarking, Best Practices; Reasons for Gaps and Five Types of Gaps, ERP Project Management, Business Process Modelling and Business Modelling.
UNIT III	Configuration, testing; Managing ERP Security: Types of Security Issues, System Access Security, Authorizations, Data Security and Technology for Managing Data Security; Data Migration: Migration of Data; Cutover, Go Live preparation; Training: Objective, Strategy, Environment and Technology, Train the Trainer Approach, Delivery, Content Development, Evaluation, Roles; Reasons for Failure of an ERP Implementation, Reasons for Success of ERP Implementation, Change Management.
UNIT IV	Human Capital Management, Financial Management, Procurement and Inventory Management Through ERP, Production Planning and Execution, Supplier Relationship Management Supply Chain Planning, Sales and Service, Quality Management, Logistics Execution: Warehouse and Transport Management, Customer Relationship Management.
UNIT V	Implementation Issues: Pre implementation issues, financial justification of ERP, evaluation of commercial software during implementation, ERP for industries: ERPs for Auto Industry, ERPs for Pharma, ERPs for Retail, ERPs for Educational Institutions, ERPs for Banks, ERPs for Insurance Companies; Case studies: mySAP Business Suite Implementation at ITC, Oracle ERP Implementation at Maruti Suzuki, Siebel CRM Implementation at Bharti Airtel.

Text books:

1. Enterprise Resource Planning by Rajesh Ray, Tata McGraw Hill Education, 2011.

2. ERP Demystified, 2nd Edition by Alexis Leon, Tata McGraw Hill Education, 2008.

REFERENCES:

1. 1 ERP, Concepts & Practices by V.K. Garg & N.K. Venkatkrishnan, PHI, 2004.

2. Enterprise Resource Planning by Ashim Raj Singla, Cengage Learning, 2008.

Course Outcome: At the completion of the course a student will be able to,

1. Describe the Basic concepts and technologies used in ERP.

2. Describe ERP package selection process.

3. Describe the process of developing and implementing ERP systems.

4. Identify and describe typical functional modules in ERP system.

5. Explain the different applications of ERP systems.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Cloud Computing Lab**	**Code:**	**D033722(033)**
Total Lab Periods	36	Batch Size	30
Max Marks	40		Min Marks: 20

Course Objectives:
- Understand the fundamentals of using the AWS Management Console to create resources.
- Understand the fundamentals of using the AWS CLI to create resources.
- Identify various options for storage creation
- Implementation process of cloud system

Course Outcomes: At the completion of the course a student will be able to,
1. Create AWS Account
2. Create Windows and Linux instances
3. Access operating system instances
4. Handle elastic file system
5. Configure load balancer

List of experiments: -

1. Amazon Account Creation

2. Enabling Multi-Factor Authentication

3. Creating Linux Instance

4. Adding New EBS Volume to Linux Instance

5. Create EC2 windows instance

6. Assigning Static IP Address to Instance

7. Amazon Elastic File System

8. Launching RDS Instance

9. AWS S3 Bucket, (Object Storage)

10. AWS Elastic Load Balancer (ELB)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Project (Phase – I)**	**Code:**	**D033723(033)**
Total Lab Periods	36	Batch Size	30
Max Marks	40		Min Marks: 20

Course Objectives:
- To provide an opportunity for students to learn from professionals of the industry.
- To provide an opportunity for students to understand real-life practices and implementation of theoretical Engineering knowledge in practical environment.
- To provide an opportunity for students to acquire interpersonal skills and ability for team work.
- To obtain knowledge of how to make optimal decisions to resolve technical challenges.

Course Outcomes: On completion of the course, students will –
1. Be able to apply engineering knowledge and utilize technical resources in real life projects by integrating classroom theory with real-time situations.
2. Acquire practical skills, organizational skills, professional awareness and experience working on projects.
3. Obtain knowledge of how to make optimal decisions to resolve technical challenges.
4. Be able to write technical documents related to the project work completed
5. Learn effective communication skills to present the completed project in a promise manner.

Project Phase-I:

A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides.

The objective of Project Work Phase-I is to enable the student to take up investigative study in the broad field of Information Technology, either fully practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the mentoring of a Project Guide(s).

This is expected to provide a good initiation for the student(s) in R&D work.

The assignment shall normally include:

- ➢ Survey and study of published literature on the assigned topic;
- ➢ Preparing an Action Plan for conducting the investigation, including team work;
- ➢ Working out a preliminary Approach to the Problem relating to the assigned topic;
- ➢ Block level design documentation
- ➢ Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
- ➢ Preparing a Written Report on the Study conducted for presentation to the Department;
- ➢ Final project presentation before the concerned departmental committee.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Project (Phase – I)**	**Code:**	**D033724(033)**
Max Marks	60		Min Marks: 30

Course Objectives:
- To expose students to the 'real' working environment and get acquainted with the organization structure, business operations and administrative functions.
- To have hands-on experience in the students' related field so that they can relate and reinforce what has been taught at the university.
- To promote cooperation and to develop synergetic collaboration between industry and the university in promoting a knowledgeable society.
- To set the stage for future recruitment by potential employers.
- To obtain knowledge of how to make optimal decisions to resolve work challenges.

Course Outcomes:
On completion of the course, students will be able to–
1. Participate in the projects in industries during his or her industrial training.
2. Describe use of advanced tools and techniques encountered during training and visit.
3. Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.
4. Acquire practical skills, organizational skills, Communication skills, lifelong learning skills, professional awareness and experience working on projects and alongside industry experts.
5. Write a technical project report that follows an established structure and give oral presentations with focus on the project results and a credible work procedure.

Guidelines for the students: -

1. As per CSVTU guidelines, Industrial Training have to be done at the end of 6th Semester.

2. The student must follow the instructions given by the Teacher In-charge of Industrial Training.

3. The purpose of the Industrial Training is to develop the work process being performed and apprise them of the industry problems.

4. During the training, students will be given practical problems by the industry in which they are undergoing training. In case the industry do not give them the problems, the students will themselves formulate problems and carry out detailed study on them and recommend the optimum solution based on their theory knowledge.

5. On completion of training programme, the Project Report must be submitted to Teacher In-charge on the date and time announced.

6. The Project report must include the following:

   (a) The basic history/introduction of the industry.

   (b) The software and hardware used.

   (c) The sequence of operations followed/ systems introduced for the project development.

   (d) The formulation of practical problems.

   (e) Data required formulating the problems.

   (f) Analysis of the data, steps required and commands used in industry.

   (g) Certificate from the industry for the period of training undergone.

7. The student would be evaluated through Report and Viva-voce.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Natural Language Processing (Professional Elective III)**	**Code:**	**D033731(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course objective:
- To understand the concepts of morphology, syntax, semantics and pragmatics of the language.
- To recognize the significance of pragmatics for natural language understanding
- To describe the simple system based on logic and demonstrate the difference between the semantic presentation and interpretation of that presentation
- To describe the application based on natural language processing and to show the points of syntactic, semantic and pragmatic processing

UNIT I	**Introduction and syntactic processing:** The study of Language, Linguistic background, Grammars and Parsing, Features and Augmented Grammars, Grammars for Natural Language, towards efficient parsing, Ambiguity Resolution.
UNIT II	**Semantic interpretation:** Semantics and Logical Form, Linking Syntax and Semantics, Ambiguity Resolution, Strategies for Semantic, Interpretation, Scoping and the Interpretation of Noun Phrases.
UNIT III	**Pragmatics:** Discourse: Reference Resolution, Syntactic and Semantic coherence, Text Coherence, An Inference based resolution algorithm. Dialogue and Conversational Agents: What makes dialogue different? Dialogue structure and coherence.
UNIT IV	**Natural Language generation**: Introduction to language generation, architecture for generation, surface realization, systemic grammar, functional unification grammar, discourse planning.
UNIT V	**Machine translation:** Language Similarities and Differences, transfer metaphor, syntactic transformations, lexical transfer, idea of Interlingua, direct translation, using Statistical Techniques

Text books:

1. Speech and Language Processing, by Jurafsky, D. & Martin, J.H.
2. Natural Language Understanding, Allen, J

REFERENCES:

1. Foundations of General Linguistics by Atkinson, M, Kilby, D A & Roca, I
2. An Introduction to Language by Fromkin, V & Rodman, R
3. Natural Language Processing for Prolog Programmers by Covington, M A
4. Natural language processing in Prolog: an introduction to computational linguistics by Gazdar, G& Mellish..

Course Outcomes: After successful completion of the course, students

1. Can set up, implement and evaluate natural language technology experiment step by step
2. Will be familiar with a sample of machine learning techniques and can assess which ones are suitable for a given problem.
3. Can explain the interaction between rule based and probabilistic methods in language technology.
4. Can develop NL generation mechanisms.
5. In-depth knowledge of machine translation

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Applied Fuzzy logic & Fuzzy Sets (Professional Elective III)**	**Code:**	**D033732(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course objective: • To develop the fundamental concepts such as fuzzy sets, operations and fuzzy relations. • To learn about the fuzzification of scalar variables and the defuzzification of membership functions. • To learn three different inference methods to design fuzzy rule based system. • To develop fuzzy decision making by introducing some concepts and also Bayesian decision methods • To learn different fuzzy optimization methods	
UNIT I	**Classification of sets and Fuzzy sets**: Basic concepts of classical set and Fuzzy set, Basic operations & properties of classical & Fuzzy, sets, Basic concepts of classical relation & Fuzzy relation.
UNIT II	**Membership Function & Fuzzy Arithmetic**, Numbers, Vectors and the Extension Principle. Features of the Membership Function, Standard Forms and Boundaries, Russification, Membership value Assignments, Extension Principle, Fuzzy Transform, Fuzzy Numbers, Approximate Methods of Extension, Fuzzy Vectors.
UNIT III	**Classical Logic, Fuzzy Logic & Fuzzy Rule Based Systems**.: Classical Predicate logic, Fuzzy Logic, Approximate Reasoning, Fuzzy Tautologies, Contradictions, Equivalence & Logical Proofs, Natural Language, Linguistic Hedges, Rule-Based Systems.
UNIT IV	**Fuzzy Non-linear Simulation & Fuzzy Decision Making:** Fuzzy Relational Equations, Partitioning, Non-linear simulation using Fuzzy Rule-Based systems, Fuzzy Synthetic Evaluation, Fuzzy ordering, Preference & Consensus, Fuzzy Bayesian Decision method.
UNIT V	**Fuzzy Control system & Fuzzy Optimization:** Simple Fuzzy logic controllers, Industrial Applications, Fuzzy Optimization, Fuzzy One Dimensional Optimization, Fuzzy maximum & minimum.

Text books:

1. Fuzzy Logic with Engineering Applications, Timothy. J. Ross, McGraw Hill Publications
2. Fuzzy sets & Fuzzy Logic, Theory & Applications, G.J. Klier, Boyuan , Prentice Hall of India

REFERENCES:

1. Fuzzy set Theory and its application, By H.J. Zimmermann, Allied Publishers, LTD
2. Fuzzy sets uncertainty and Information, By G.J. Klir and T.A. Folger, Prentice Hall
3. Mathematical Principles of Fuzzy logic, By Novak, Kluwer Academic Publishers.
4. Fuzzy Logic and Soft computing, By Chen, Kluwer Academic Publishers

Course Outcomes:

1. Understand the basic ideas of fuzzy sets, operations and properties of fuzzy sets and also about fuzzy relations.
2. Use the membership functions and fuzzy Arithmetic
3. Design fuzzy rule based system.
4. Apply fuzzy Decision Making practically
5. Use fuzzy optimization and control systems in industrial applications

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Grid Computing (Professional Elective III)**	**Code:**	**D033733(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course objective:

• To understand the need for and evolution of Grids in the context of processor- and data-intensive applications

• To be familiar with the fundamental components of Grid environments, such as authentication, authorization, resource access, and resource discovery

UNIT I	**Concepts and Architecture:** Introduction-Parallel and Distributed Computing-Cluster Computing-Grid Computing Anatomy and Physiology of Grid- Web and Grid Services-Grid Standards - OGSAWSRF-Trends, Challenges and applications.
UNIT II	**Grid Monitoring: GRID MONITORING:** Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- R-GMA, Grid ICE, MDSService Level Agreements (SLAs) - Other Monitoring Systems Ganglia, Grid Mon, Hawkeye and Network Weather Service.
UNIT III	**Grid Security and Resource Management:** Grid Security-A Brief Security Primer-PKI-X509 Certificates-Grid Security-Grid Scheduling and Resource Management, Gridway and Gridbus Broker-principles of Local Schedulers- Overview of Condor, SGE, PBS, LSFGrid Scheduling with QoS.
UNIT IV	**Data Management and Grid Portals:** Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Federation Services-Grid Portals-Generations of Grid Portals.
UNIT V	**Grid Middleware:** List of globally available Middlewares - Case Studies-Recent version of Globus Toolkit and gLite - Architecture, Components and Features. Features of Next generation grid.

Text books:

1. Ian Foster, Carl Kesselman, The Grid 2: Blueprint for a New Computing Infrastructure, Elsevier Series, 2004.
2. Parvin Asadzadeh, Rajkumar Buyya, Chun Ling Kei, Deepa Nayar, and Srikumar Venugopal, High Performance
3. Computing: Paradigm and Infrastructure, Wiley Press.

REFERENCES:

1. Vladimir Silva, Grid Computing for Developers, Charles River Media, January 2006.
2. Jarek Nabrzyski, Jennifer M. Schopf, Jan Weglarz, Grid Resource Management: State of the Art and Future Trends, (International Series in Operations Research & Management Science), Springer; First edition, 2003
3. Fran Berman, Geoffrey Fox, Anthony J.G. Hey, Grid Computing: Making The Global Infrastructure a Reality,Wiley, 2003
4. Maozhen Li, Mark Baker, The Grid: Core Technologies, Wiley, 2005
5. Joshy Joseph, Craig Fellenstein Grid Computing, IBM Press, 2004 19
6. Borja Sotomayor, Lisa Childers, Globus Toolkit 4: Programming Java Services, The Elsevier Series in Grid Computing, Morgan Kaufmann, 2005.

Course Outcome: After successful completion of the course students will be

1. be able to justify the applicability, or non-applicability of Grid technologies for a specific application
2. be able to evaluate enabling technologies such as high-speed links and storage area networks for building computer grids;
3. be able to design a grid computing application in one of the key application areas e.g. Computer Animation, EResearch.
4. Learn to overcomes challenges of data management i.e. Grid Technology
5. Use the middleware according to need.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Decision Support System (Professional Elective III)**	**Code:**	**D033734(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course Objective:

- To review and clarify the fundamental terms, concepts and theories associated with Decision Support Systems, computerized decision aids, expert systems, group support systems and executive information systems.
- To examine examples and case studies documenting computer support for organizational decision making, and various planning, analysis and control tasks.
- To understand that most Decision Support Systems are designed to support rather than replace decision makers and the consequences of this perspective for designing DSS.
- To discuss organizational and social implications of Decision Support Systems.

UNIT I	**Overview of different types of decision-making:** Strategic, tactical and operational. Consideration of organizational structures. Mapping of databases, MIS, EIS, KBS, expert systems OR modeling systems and simulation, decision analytic systems onto activities within an organization. Extension to other 'non organizational' areas of decision making. Relationship with knowledge management systems
UNIT II	**Studies of human cognition in relation to decision making and the assimilation of information:** Cultural issues. Implications for design of decision-making support. Communication issues.
UNIT III	**Normative, descriptive and prescriptive analysis:** requisite modeling. Contrast with recognition primed decision tools.
UNIT IV	**Database, MIS, EIS, KBS, Belief nets, data mining. OR modeling tools:** simulation and optimization. History, design, implementation: benefits and pitfalls. Risk assessment. Decision analysis and strategic decision support.
UNIT V	**Group decision support systems and decision conferencing**. Intelligent decision support systems: tools and applications. Cutting-edge decision support technologies. History, design, implementation: benefits and pitfalls. Deliberative e-democracy and e-participation

Text books:

1. P.R. Kleindorfer, H.C. Kunreuther, P.J.H. Schoemaker , "Decision Sciences: an integration Perspective",
2. Cambridge University Press 1993
3. G.M. Marakas, Decision support Systems in the 21st Century, Prentice Hall.

REFERENCES:

1. 1. E. Turban and J.E. Aronson, Decision support Systems and Intelligent Systems. Prentice Hall
2. V.S.Janakiraman and K.Sarukesi, Decision Support Systems, PHI
3. Efrem G. Mallach, Decision Support and Data Warehouse Systems, tata McGraw-Hill.

Course outcome: At the end of the course students will

1. Recognize the relationship between business information needs and decision making
2. Appraise the general nature and range of decision support systems
3. Appraise issues related to the Analyse, design, development and implement a DSS
4. Select appropriate modeling techniques

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Technology.		
Branch:	**Information Technology**	Semester:	VII
Subject:	**Real Time Operating Systems (Professional Elective III)**	**Code:**	**D033735(033)**
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	**One per Unit**
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

Course Objective:

1. Develop an understanding of various real-time operating system
2. Obtain a broad understanding of the technologies and applications for the emerging and exciting domain of real-time operating system
3. Get in-depth hands-on experience in designing and developing a real-time operating system.

UNIT I	**Introduction:** Introduction to UNIX/LINUX, Overview of Commands, File I/O,(open, create, close, lseek, read, write), Process Control (fork, vfork, exit, wait, waitpid, exec).
UNIT II	**Real Time Operating Systems:** Brief History of OS, Defining RTOS, The Scheduler, Objects, Services, Characteristics of RTOS, defining a Task, asks States and Scheduling, Task Operations, Structure, Synchronization, Communication and Concurrency. Defining Semaphores, Operations and Use, Defining Message Queue, States, Content, Storage, Operations and Use
UNIT III	**Objects, Services and I/O:** Pipes, Event Registers, Signals, Other Building Blocks, Component Configuration, Basic I/O Concepts, I/O Subsystem
UNIT IV	**Exceptions, Interrupts and Timers:** Exceptions, Interrupts, Applications, Processing of Exceptions and Spurious Interrupts, Real Time Clocks, Programmable Timers, Timer Interrupt Service Routines (ISR), Soft Timers, Operations**.**
UNIT V	**Case Studies of RTOS:** RT Linux, Micro C/OS-II, Vx Works, Embedded Linux, and Tiny OS.

Text books:

1. Qing Li, "Real Time Concepts for Embedded Systems", 2011, Elsevier.

REFERENCES:

1. Rajkamal, "Embedded Systems- Architecture, Programming, and Design", 2007, TMH.
2. W. Richard Stevens, Stephan A. Rago, "Advanced UNIX Programming", 2006, 2nd Edition, Pearson.
3. Dr. Craig Hollabaugh, "Embedded Linux: Hardware, Software and Interfacing", 2008, 1st Edition, Pearson.

Course outcome: At the end of the course students will

1. Execute various commands of real-time operating system
2. recognize the characteristics of a real-time operating system
3. understand and develop document on an architectural design of a real-time operating system
4. Handle exceptions, interrupts and use timers of real-time system
5. Use and scrutinize type of various real-time operating systems according to the application

Chhattisgarh Swami Vivekananda Technical University, Newai

Name of the Program: Bachelor of Technology

Semester: B. Tech – 7th   Branch: IT
Subject: Universal Human values 2   Course Code: D000701(046)
Total Marks in End Semester Exam: L: T: P: 2 Credits: 0

Course Objective(s):

- Development of a holistic perspective based on self- exploration about themselves (human being), family, society and nature/existence.
- Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
- Strengthening of self-reflection.
- Development of commitment and courage to act.

UNIT-I Introduction- Need, Basic Guidelines, Content and Process for Value Education
- Purpose and motivation for the course, recapitulation from Universal Human Values-I.
- Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations
- Right understanding, Relationship and Physical Facility- the basic requirements for fulfillment of aspirations of every human being with their correct priority.
- Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
- Method to fulfill the above human aspirations: understanding and living in harmony at various levels.
- Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.

UNIT-II Understanding Harmony in the Human Being - Harmony in Myself!
- Understanding the needs of Self ('I') and 'Body' - happiness and physical facility.
- Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer).
- Understanding the characteristics and activities of 'I' and harmony in 'I'.
- Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail.
- Programs to ensure Sanyam and Health.
- Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life.
- Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease

UNIT-III Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship
- Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship
- Understanding the meaning of Trust; Difference between intention and competence
- Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship

- Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals
- Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.
- Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

UNIT-IV Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

- Understanding the harmony in the Nature
- Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature.
- Understanding Existence as Co-existence of mutually interacting units in all-pervasive space.
- Holistic perception of harmony at all levels of existence.
- Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

UNIT-V Implications of the above Holistic Understanding of Harmony on Professional Ethics

- Natural acceptance of human values
- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems
- Strategy for transition from the present state to Universal Human Order:
  - At the level of individual: as socially and ecologically responsible engineers, technologists and managers
  - At the level of society: as mutually enriching institutions and organizations
- Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions e.g. to discuss the conduct as an engineer or scientist etc.

Text Books:
1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.

Reference Books:
1. The Story of Stuff (Book).
2. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi.
3. Small is Beautiful - E. F Schumacher.

Course Outcome:

After completion of course, student should be able to

- To become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
- They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to- day settings in real life, at least a beginning would be made in this direction.