

# Chhattisgarh Swami Vivekanand Technical University, Bhilai ( C.G.)

Scheme of teaching and examination

## B.E. VIII Semester Information Technology

S.No	Board of Study	Subject Code	Subject Name	Periods per week			Scheme of examination			Total Marks	Credits [L+(T+P)/2]
				L	T	P	ESE	CT	TA		
				1	Info. Technology	333811(33)	Enterprise Resource Planning	3	1		
2	Computer Sc. Engg.	322812(22)	Data Mining & Ware Housing	4	1	-	80	20	20	120	5
3	Info. Technology	333813(33)	Design of Unix Operating System	3	1	-	80	20	20	120	4
4	<b>Refer Table-3</b>		Professional Elective-3	4	-	-	80	20	20	120	4
5	<b>Refer Table-4</b>		Open Elective - 4	4	-	-	80	20	20	120	4
6	Info. Technology	322821(33)	Simulation Lab	-	-	3	40	-	20	60	2
7	Info. Technology	322822(33)	Software Technology Lab - 5	-	-	3	40	-	20	60	2
8	Info. Technology	322823(33)	Unix / Linux Lab	-	-	3	40	-	20	60	2
9	Info. Technology	322824(33)	Major Project	-	-	7	100	-	80	180	4
10	Info. Technology	300825(33)	Report Writing & Seminar	-	-	2	-	-	40	40	1
11			Library	-	-	1	-	-	-	-	-
			<b>TOTAL</b>	<b>18</b>	<b>3</b>	<b>19</b>	<b>620</b>	<b>100</b>	<b>280</b>	<b>1000</b>	<b>32</b>

**L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Examination, CT- Class Test,TA- Teacher's Assessment**

### Professional Elective ( Table-3)

S.No.	Board of Studies	Subject Code	Subject Name
1	Computer Science Engg.	322871(22)	Neural Network & Fuzzy Logic
2	Computer Science Engg.	322872(22)	Distributed Parallel Processing
3	Computer Science Engg.	322873(22)	Distributed Multimedia
4	Computer Science Engg.	322874(22)	Decision Support System
5	Computer Science Engg.	322875(22)	Wireless Networks
6	Computer Science Engg.	322876(22)	Real Time Systems
7	Computer Science Engg.	322878(22)	Cyber Crime & Laws

Note-1 : 1/4 of total strength of students subjects to Minimum Strength of twenty students is required to offer an elective in the college in a particular academic session.

Note -2 : Choice of elective course once made for an examination cannot be changed for future examination.

**Table - 4**

<b>Open Elective - 4</b>			
<b>S.N.</b>	<b>Board of Studies</b>	<b>Code</b>	<b>Name of Subject</b>
1	Management	300881(36)	Enterprise Resource Planning
2	Information Technolgy	300882(33)	E - Commerce & strategic IT
3	Management	300883(36)	Technology Management
4	Information Technolgy	300884(33)	Decision Support & Executive Informaton System
5	Computer Science & Engg.	300885(22)	Software Technology
6	Management	300886(36)	Knowledge Enterpreneurship
7	Management	300887(36)	Finance Management
8	Management	300888(36)	Project Planning, Management & Evaluation
9	Mechanical Engg.	300889(37)	Safety Engineering
10	Computer Science & Engg.	300890(22)	Bio Informatics
11	Mechanical Engg.	300891(37)	Energy Conervation & Management
12	Nanotechnology	300892(47)	Nanotechnology
13	Management	300893(36)	Intellectuall Property Rights
14	Mech. Engg.	300894(37)	Value Engineering
15	Civil Engg.	300895(20)	Disaster Management
16	Civil Engg.	300896(20)	Construction Management
17	Civil Engg.	300897(20)	Ecology and Sustainable Development
18	Chem. Engg.	300898(19)	Non conventional Energy Source
19	Elect. Engg.	300899(24)	Energy Auditing and Management

NOTE- (1 ) 1/4 of total strength of students subjects to Minimum Strength of twenty students is required to offer an elective in the college in a particular academic session.

NOTE - (2) Choice of elective course once made for an examination cannot be changed for future examination.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: **Data Mining & Warehousing.**

Total Theory Periods: **50**

Total Marks in End Semester Exam: **80.**

Minimum number of class tests to be conducted: **02.**

Branch: **Information Technology.**

Code: **322812(22)**

Total Tutorial Periods: **12**

## **Unit-I Overview and Concepts:**

Need for data warehousing, Basic elements of data warehousing, Trends in data warehousing. Planning And Requirements: Project planning and management, Collecting the requirements. Architecture And Infrastructure: Architectural components, Infrastructure and metadata.

## **Unit-II Data Design and Data Representation:**

Principles of dimensional modeling, Dimensional modeling advanced topics, data extraction, transformation and loading, data quality.

## **Unit-III Information Access and Delivery:**

Matching information to classes of users, OLAP in data warehouse, Data warehousing and the web. Implementation And Maintenance: Physical design process, data warehouse deployment, growth and maintenance.

## **Unit-IV Data Mining Introduction:**

Basics of data mining, related concepts, Data mining techniques Data Mining Algorithms: Classification, Clustering, Association rules. Knowledge Discovery: KDD Process.

## **Unit-V Web Mining:**

Content Mining, Web Structure Mining, Web Usage mining. Advanced Topics: Spatial mining, Temporal mining. Visualisation : Data generalization and summarization-based characterization, Analytical characterization: analysis of attribute relevance, Mining class comparisons: Discriminating between different classes, Mining descriptive statistical measures in large databases Data Mining Primitives, Languages, and System Architectures: Data mining primitives, Query language, Designing GUI based on a data mining query language, Architectures of data mining systems Application and Trends in Data Mining: Applications, Systems products and research prototypes, Additional themes in data mining, Trends in data mining

## **Text Books:**

Prabhu, Data ware housing- concepts, Techniques, Products and Applications, Prentice hall of India

Soman K P, "Insight into Data Mining: Theory & Praticce" , Prentice hall of India

M.H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education.

## **Reference Books:**

Paulraj Ponniah, "Data Warehousing Fundamentals", John Wiley.

Gupta, "Introduction To Datamining with Case Studies", PHI

Ralph Kimball, "The Data Warehouse Lifecycle toolkit", John Wiley.

IBM, "Introduction to Building The Datawarehouse" PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: **Enterprise Resource Planning**

Total Theory Periods: **40**

Total Marks in End Semester Exam: **80**

Minimum number of class tests to be conducted: **02**.

Branch: **Information Technology**.

Code: **333811(33)**

Total Tutorial Periods: **12**

## **UNIT - I Overview of Business Functions :**

Business function in an organization, material management, scheduling, shop floor control. Forecasting, accounting & finance, human resources, productivity management.

## **UNIT- II Typical Business Processes :**

Core processes, product control, sales order processing, purchase, administrative process, human resource, finance support processes, marketing, strategic planning, research & development problems in traditional functional view. Need for integrated process view, information as a resource, motivation for ERP.

## **UNIT – III Evolution of Information System :**

EDP (electronic data processing) system, management information systems (MIS), executive information systems, information needs of organization, ERP as an integrator of information needs at various levels, decision making involved at the above level.

## **UNIT – IV Erp Models /Functionality:**

Salesorderprocessing, MRP, scheduling, forecasting, maintenance, distribution, finance, features of each of the models description of data flows across module, overview of the supporting databases, technologies required for ERP.

## **UNIT – V Implementation Issues:**

Pre Implementation issues, financial justification of ERP, evaluation of commercial software during implementation issues, reengineering of various business process, education & training, project management, post implementation issues, performance measurement.

## **Text Books**

1. V.K. Garg & N.K. Venkatkrishnan ; ERP, concepts & practices, PHI.
2. S. Sadagopan : MIS, PHI

## **Reference Books:**

1. V. Rajaraman : Analysis & Design of Information Systems, PHI
2. K. M. Hussain & D. hussain ; Information systems, Analysis, Design & Implementation, TMH.
3. MONAK & BRADY : Conceptss in ERP, vikas pub. Thosmson
4. J. Kanter : Managing with information, PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Subject: **Design of Unix Operating System.**

Total Theory Periods: **40**

Total Marks in End Semester Exam: **80**

Minimum number of class tests to be conducted: **02**

Branch: **Information Technology.**

Code: **333813(33)**

Total Tutorial Periods: **12**

## **UNIT-1 Introduction:**

Introduction to multi-user system, history of UNIX, features & benefits, versions of UNIX, Unix file system, concept of inode table, links, commonly used commands like who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln, chmod, cp, grep, sed, awk, tr, yacc etc. getting started (login/logout)

Vi editor: Introduction to text processing, command & edit mode invoking vi, deleting & inserting line, deleting & replacing character, searching for strings, yanking, running shell command macros, set window, set auto indent, set no., introduction to exrc file.

## **UNIT-2 Introduction to Shell Scripts & Awk Programming:**

Bourne shell, C shell, shell variables, scripts, Meta characters and environment, if and case statements, for while and until loops., Awk pattern scanning and processing language, BEGIN and End patterns, AWK arithmetic and variable built in variable names and operators, arrays, strings.

## **UNIT-3 General Overview of the System:**

System structure, user perspective, O/S Services assumption about Hardware, The kernel and buffer cache architecture of Unix O/S, System concepts, Buffer headers, Structure of the buffer pool, scenarios for retrieval of the buffer, Reading and writing disk Blocks, advantage and disadvantage of buffer cache.

## **UNIT-4 Internal Representation of Files System Calls for the System:**

INODES, structure of regular Directories, conversions of a path name to an inode, super block, inode assignment to a new file, allocation of disk blocks. OPEN, READ WRITE, CLOSE, file and record locking, File creation, Operation of special files, change directory and change root, change owner and change mode, STAT and FSTAT, PIPES, Mounting and unmounting files system, Link, Unlink.

## **UNIT-5 Structures of Processes and Process Control:**

Process states and transitions layout of system memory, the context of a process, manipulation of process address space, sleep process creation/termination,. The user ID of a process, changing the size of a process. The SHELL.

## **Text Books:**

1. Design of Unix O.S. , Maurice Bach, Prentice Hall of India.
2. Unix Concepts and Applications, Sumitabha Das, Tata McGraw Hill

## **Reference Books:**

1. The UNIX Programming Environment, B.W. Kernighan & R. Pike, , Prentice Hall of India, 1995.
2. Advance UNIX by Steven Prata, a Programming Guide, BPB publication, New Delhi.
3. Unix Bible, Lepage, Yves & Iarrera, Paul, IDG Books, India

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Subject: **Neural Network and Fuzzy Logic.**

Total Marks in End Semester Exam: **80.**

Minimum number of class tests to be conducted: **02.**

Branch: **Information Technology**

Code: **322871(22)**

Total Tutorial Periods: **Nil.**

Total Theory Periods: **40**

## **UNIT-1 Introduction to Artificial Neural Networks:**

Elementary Neurophysiology, Models of a Neuron, Neural Networks viewed as directed graphs, Feedback, from neurons to ANN, Artificial Intelligence and Neural Networks; Network Architectures, Single-layered Feed forward Networks, Multi-layered Feedforward Networks, Recurrent Networks, Topologies.

## **UNIT-2 Learning and Training:**

Activation and Synaptic Dynamics, Hebbian, Memory based, Competitive, Error-Correction Learning, Credit Assignment Problem: Supervised and Unsupervised learning, Memory models, Stability and Convergence, Recall and Adaptation.

## **UNIT-3 A Survey of Neural Network Models:**

Single-layered Perceptron – least mean square algorithm, Multi-layered Perceptrons – Back propagation Algorithm, XOR – Problem, The generalized Delta rule, BPN Applications, Adalines and Madalines – Algorithm and applications.

## **UNIT-4 Applications:**

Talking Network and Phonetic typewriter: Speech Generation and Speech recognition, Neocognitron – Character Recognition and Handwritten Digit recognition, Pattern Recognition Applications.

## **UNIT-5 Neural Fuzzy Systems:**

Introduction to Fuzzy sets, operations, relations, Examples of Fuzzy logic, Defuzzification, Fuzzy Associative memories, Fuzziness in neural networks and examples,

## **Text Books:**

1. Artificial Neural Networks by B. Yagna Narayan, PHI
2. Neural Networks Fuzzy Logic & Genetic Algorithms by Rajshekar & Pai, Prentice Hall

## **Reference Books:**

1. Neural Networks by James A. Freeman and David M. Strapetuns, Prentice Hall,.
3. Neural Network & Fuzzy System by Bart Kosko, PHI.
4. Neural Network Design by Hagan Demuth Deale Vikas Publication House

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

**Semester: VIII**

**Subject: Distributed Parallel Processing.**

**Total Marks in End Semester Exam: 80..**

**Minimum number of class tests to be conducted: 02.**

**Branch: Information Technology**

**Code: 322872(22)**

**Total Tutorial Periods: Nil.**

**Total Theory Periods: 40**

## UNIT - I

Parallel processing – Definition, Architectures; Programmability- Operating Systems Support, Types of Os, Parallel Programming Models, Software Tools; Data Dependency Analysis; Shared Memory Programming ; Thread based Implementation- Management, Example, Attributes Mutual exclusion, Events & condition Variables, Deviation computation

## UNIT-II

Distributed Computing -1- message passing, general model, programming model, PVM-Process Control, Information, Message Buffers, Signalling, Sending, receiving, Group Operations, Starting PVM, Compiling PVM Application, PVM Console Commands.

## UNIT-III

Distributed Computing-II- remote procedure call, parameter passing, Locating the server, semantics, security, problem areas, Java Remote method invocation, DCE, Deploying application in DCE, POSIX Thread reference-Creation, Attributes, Termination, Mutual Exclusion primitives, Condition Variables, Cancellations, Specific data Functions.

## UNIT-IV

Algorithms for parallel machines- Computations, Histogram Computation, Parallel Reduction, Quadrature problem, Matrix Multiplication, Parallel Sorting Algorithms, solving linear systems, probabilistic algorithms.

## UNIT-V

Parallel programming languages- Sample Problem; Fortran 90; nCUBE C; Occam; C-linda. Debugging parallel programme- techniques, message passing, shared memory; Data Flow Computing, Systolic Architecture, functional and logical paradigms, distributed shared memory. Distributed Data Bases- Objectives, Issues, System, Distribution Options Data Base Integrity, Concurrency Control, DDBMS Structure. Distributed Operating Systems-Need, Network Operating Systems, DOS Goals, Design Issues, Amoeba.

## TEXT BOOKS

- I. Introduction to Parallel Processing by M. Sasikumar et al- Prentice Hall of India.
- II. Parallel Distributed Processing by David E Ramulhat , MIT press

## REFERENCE BOOKS

- I. Parallel Processing by Rajaraman V- Prentice Hall of India.
- II. An Introduction to Distributed and Parallel Processing by [John A. Sharp](#); Alfred Waller Ltd
- III. Parallel and Distributed Processing by Rolim, Jose ; Springer

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Subject: **Distributed Multimedia.**

Total Theory Periods: **40**

Total Marks in End Semester Exam: **80**

Minimum number of class tests to be conducted: **02.**

Branch: **Information Technology**

Code: **322873(22)**

Total Tutorial Periods: **Nil**

## **Unit-I: Components of Distributed system**

Application software, Document store, Image and still video store, Audio and full motion video store, Object directory service agent, Components service agent, User interface service agent.

**Distributed Client- Server Operation:** Clients in distributed work group computing, Database operations, Middleware in distributed work group computing.

## **Unit-II: Multimedia object server:**

Types of multimedia server, mass storage for multimedia servers, write once read many optical disks, rewritable optical disks, Optical disk libraries, network topologies for multimedia object servers.

Multi server Network topologies: traditional LANs, Extended Lans, High Speed LANs, Wans, Network performance issues,

## **Unit-III: Distributed Multimedia database:**

Database organization for multimedia applications, transaction management for multimedia system, managing hypermedia records as objects.

**Managing distributed object:** Inter server communication, object server architecture, object identification, object revision management, optimizing network location of object, object directory services, multimedia object retrieval, database replication techniques, Object migrations schemes, Optimizing object storage.

## **Unit-IV: System Design Methodology and Considerations**

Fundamental Design issue, key deliverables, data mining enterprise requirements, technology assessments, Business information model, Examining current architecture and feasibility, Performance analysis: Performance analysis and monitoring, Impact of performance issues on design.

## **Unit-V: Designing for performance**

Storage management, Access management and optimization of storage distribution, Maximizing network transportation, managing system performance.

**Multimedia system design:** System design methodology, designing system object, object oriented multimedia system, designing objects, system design analysis, system extensibility.

## **Text Books & References**

- 1) Multimedia system design : Prabhat K.Andleigh , Kiran Thakrar
- 2) Multimedia: Computing, Communication and Application by " Ralf Steinmetz and Klara Nahrstedt.
- 3) Data And Computer Communication by " William Stallings

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Branch: **Information Technology**

Subject: **Decision Support System**

Code: **322874(22)**

Total Theory Periods: **40**

Total Tutorial Periods: **Nil**

Total Marks in End Semester Exam: **80.**

Minimum number of class tests to be conducted: **02.**

## 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 Book

1. P.R. Kleindorfer, H.C. Kunreuther, P.J.H. Schoemaker "Decision Sciences: an integration perspective' Cambridge University Press 1993
2. G.M. Marakas, Decision support Systems in the 21st Century, Prentice Hall, 1999.

## Reference Book

- 1 E. Turban and J.E. Aronson (2001) Decision support Systems and Intelligent Systems. 6th Edition. Prentice Hall
- 2 V.S.Janakiraman and K.Sarukesi, Decision Support Systems, PHI
- 3 Efram G. Mallach, Decision Support and Data Warehouse Systems, tata McGraw-Hill Edition

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: Wireless Networks.

Total Theory Periods: 40

Total Marks in End Semester Exam: 80..

Minimum number of class tests to be conducted: 02.

Branch: Information Technology

Code: 322875(22)

Total Tutorial Periods: Nil

## UNIT-1

Wireless Communication Standard-First, Second and Third Generation Wireless Communication Network, Coverage Extension, Types; Characterisation of Wireless Channels-multipath Propagation, Linear Time Variant, Channel Model, Channel Correlation Function, Large Scale Path Loss and Shadowing, Fading.

## UNIT-2

Bandpass Transmission Technique for Mobile Radio- Signal Space and Decision Region, Digital Modulation-MPSK, MSK, GMSK, OFDM, Power Spectral Density, Probability of Transmission Error; Receiver Technique for Fading Dispersive Channels.

## UNIT-3

CELLULAR COMMUNICATION-Frequency reuse and mobility Management, Cell Cluster Concept, Co Channel and Adjacent Channel Interference, Call Blocking and Delay at Cell Site, Cell Splitting, Sectoring;

## UNIT-4

Multiple Access Technique, Random Access, Carrier Sense Multiple Access( CSMA), Conflict Free Multiple Access Technology and Spectral Efficiency-FDMA, TDMA, CDMA; Mobility management and In wireless network-CAC, Handoff Management, Location Management for Cellular Network and PCS network, Traffic calculation.

## UNIT-5

Wireless Internetworking-Mobile IP , Internet Protocol (IP), Transmission Control Protocol (TCP), Network Performance, Wireless Application Protocol(WAP) , Mobile Ad Hoc Network

## TEXTBOOK

1. WIRELESS COMMUNICATION & NETWORKING by Mark & Zuan , PHI
2. Wireless Communications And Networks, WILLIAM STALLINGS , PHI

## REFERENCES

1. Wireless Network Performance Handbook , by SMITH , McGraw- Hill
2. Principles Of Wireless Networks, By PAHLAVAN , PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Branch: **Information Technology**

Subject: **Real Time Systems.**

Code: **322876(22)**

Total Marks in End Semester Exam: **80.**

Total Tutorial Periods: **Nil.**

Minimum number of class tests to be conducted: **02.** Total Theory Periods: **40.**

## **Unit-I Basic Real Time Concepts, Computer Hardware, Language Issues:**

Basic component Architecture, terminology, Real Time Design Issues, CPU, Memories, Input- Output, Other Devices Language Features, Survey of Commonly Used Programming Languages, Code Generation

## **Unit-II Software life cycle, Real Time Specification and Design Techniques, Real Time Kernels:**

Phases of software life cycle, Nontemporal Transition in the software life cycle, Spiral model, Natural languages, Mathematical Specification, Flow Charts, Structure Charts, Pseudocode and programmable Design Languages, Finite state Automata, Data Flow Diagrams, Printrnets, Statecharts, Polled Loop Systems, phase/State Driven Code, Coroutines, Interrupt Driven System, Foreground/Background Systems Full Featured Real Time OS

## **Unit-III Intertask Communication and Synchronization, Real Time memory Management, System Performance Analysis and Optimization:**

Buffering Data, Mail boxes Critical Region, Semaphores, Event Flags and Signals ,Deadlock, Process Stack Management, Dynamic Allocation, Static Schemes, Response Time Calculation, Interuupt Latency, Time Loading and its Measurement, Scheduling Is NP Complete, Relocting Response Times And time Loading, Analysis of Memory Requirements, Reducing Memory Loading, I/O Performance

## **Unit-IV Queuing Models, Reliability, Testing, And Fault Tolerance, Multiprocessing Systems:**

Basic Buffer size Calculation, Classical Queuing Theory, Little's Law, Faults, Failures ,bugs AND effects.\, Reliability, Testing, Fault Tolarence, Clasiffication of Architectures, Distributed Systems, Non Von Neumans Architectures

## **Unit-V Hardware/ Software Integration, Real Time Applications:**

Goals of Real Time System Integration, Tools, Methodology, The Software Hesisenberg Uncertainty Principle, Real Time Systems As Complex System, First Real Time Application Real Time Databases, Real time Image Processing Real Time UNIX, building Real Time Applicaions with Real Time Programming Languages

### **Text Books :**

1. Real Time System, Jane W.S.Liu
2. Real Time Systems Design and Analysis by Phillip A. Laplante, PHI

### **Reference Books:**

- 1 Hard Real Time Computing Systems Predictable Scheduling Algorithms and applications by Giorgio C. Buttazzo
- 2 Real Time Design Patterns: Robust Scalable Architecture for Real Time System by Bruce Powel Douglass
- 3 Real Time System: Scheduling, Analysis and Verification by Albert M. K. Cheng

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Subject: **Cyber Crime and Laws**

Total Theory Periods: **40**

Total Marks in End Semester Exam: **80.**

Minimum number of class tests to be conducted: **02.**

Branch: **Information Technology**

Code: **322878(22)**

Total Tut Periods: **Nil**

## **Unit 1 Introduction to cyber law**

Evolution of computer Technology, emergence of cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace- Web space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

## **Unit 2 : Information technology Act**

Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

## **Unit 3: Cyber law and related Legislation**

Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code, Relevant Sections of Indian Evidence Act, Relevant Sections of Bankers Book Evidence Act, Relevant Sections of Indian Penal Code, Relevant Sections of Reserve Bank of India Act, Law Relating To Employees And Internet, Alternative Dispute Resolution , Online Dispute Resolution (ODR).

## **Unit 4: Electronic Business and legal issues:**

Evolution and development in E-commerce, paper vs paper less contracts E-Commerce models- B2B, B2C, E security.

## **Unit 5 Application area :**

Business, taxation, electronic payments, supply chain, EDI, E-markets, Emerging Trends

## **Text Book**

- 1 Cyber Laws: Intellectual property & E Commerce, Security- Kumar K, dominant Publisher
- 2 Information Security plicy & implementation Issues, NIIT, PHI

## **Reference books**

- 1 Cyber CRIME notorious Aspects of the Humans & net Criminals activity in Cyber World  
Barna Y Dayal D P Dominant Publisher
- 2 Cyber Crime Impact in the new millennium, Marine R.C. Auther press
- 3 Spam Attack, Cyber Stalking & abuse, Barna Y, Dayaal D P Dominant publisher
- 4 Frauds & Financial criouses in Cyber space, Barna Y, Dayal D P , Dominant publisher
- 5 Information Security , NIIT: PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Subject: **Unix / Linux Lab.**

Total Practical Periods: **40**

Total Marks in End Semester Exam: **40.**

Branch: **Information Technology.**

Practical Code: **322823(33)**

## **Suggested List of Experiments (but should not be limited to):**

- 1 Write shell script for the following  
It should display menu for following
  - ~~/~~ Display file contents with line number
  - ~~/~~ Display the file contents with page break
  - ~~/~~ Quit.
- 2 Write a shell script for accepting the following information and storing in file.
  - i) customer name
  - ii) item description
  - iii) quantity
  - iv) ratethe user should get the facility to enter as many record as he wants.
- 3 Calculate factorial value of any number using awk command.
- 4 Write awk command to count the number of times each word occurs in a sorted list containing one word per line.
- 5 Suppose we have table with following structure  
item name no. of item sold, cost/item. write a shell script that will display
  - i) Total no. of item sold
  - ii) Total cost of individual item
  - iii) Total cost of all item
- 6 Write c shell script to check the no is prime or not
- 7 Find greatest among three no. using c-shell script
8. Write interactive shell script to copy the contents of one file to another
9. Display the output of ls-l command in user friendly way.
- 10 Write a shell script to search a word in list of file .two arguments will be used ,one will contain words to searched and another will contain name of files.
- 11 Write menu driven shell script to execute 5 basic command of unix
- 12 Write shell script to check whether the string is vowel
  - i) 'unix' or 'UNIX
  - ii) it is two character long
- 13 Write shell script to perform following for each file of current directory
  - iii) delete a file if its extension is .old
  - iv) copy a file if its extension is .c
  - v) move a file if its extension is .Cobol
  - vi) display the contents of file if it has read permission
- 14 Delete one of one file if two file are similar, if not display proper message. write shell Script using command line argument ,without command line argument.
- 15 Write shell script to generate multiple answer type question .

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**

Branch: **Information Technology.**

Subject: **Software Technology Lab-5.**

Practical Code: **322822(33)**

Total Practical Periods: **40**

Total Marks in End Semester Exam: **40.**

Objective is to study and learn to use some of the following or any other Frameworks / Specifications:

1. Struts from Apache
2. JSF from SUN
3. ADF from Oracle
4. MyFaces from Apache
5. J2EE Blueprints
6. Hibernate/Trinidad

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

**Semester: VIII**

**Branch: Information Technology.**

**Subject: Simulation Lab**

**Practical Code: 322821(33)**

**Total Practical Periods: 3 per week.**

**Total Marks in End Semester Exam: 40.**

Simulation Lab can be performed using MATLAB, COMMSIM, MULTISIM or in any other tool / language.

Following is a suggested list of experiments to be performed using MATLAB.

**Exercise 1:** Find the value of the following expressions for  $x = 2$  and  $y = 9$ . Comment on the accuracy of the results obtained with MATLAB as compared to what you get from a pocket calculator.

Mathematical Expression	MATLAB Code
1. $x + 2y - 3(y-x)$	$x + 2*y - 3*(y-x)$
2. $2x^3 + 5/x^5$	$2*x^3 + 5/x^5$
3. $5x^{1/3} + 9y^{0.173}$	$5*x^(1/3) + 9*y^(0.173)$
4. $3 \tan(x) / (1 + \sin^2(x))$	$3*\tan(x) / (1+(\sin(x))^2)$

**Exercise 2:** The surface area of a sphere is given by  $S = 4\pi r^2$ , where  $r$  is the radius. Use MATLAB to compute the radius of a sphere having the surface area 25% greater than that of a sphere of radius 5 meters. Write all the codes necessary to solve above into an M-file named 'sph.m' and store this file into a directory C:\Work. It is desired that this code is executed if you type sph on the MATLAB command prompt as shown below

>> sph

How can it be done?

**Exercise 3:** A vector in MATLAB refers to a single dimensional array. Do the following exercises using MATLAB:

- Create a vector  $y$  having a regular spacing of 0.25 between the values 3 and 11, using the colon notation ( : ) and then using linspace command.
- Create a vector  $z$  having 20 regularly spaced values starting at -5 and ending at 5, using the colon notation ( : ) and linspace command.
- Create a vector  $u$  having 50 logarithmically equally spaced values starting at 10 and ending at 1000.

**Exercise 4:** Solve the following system of equations:

$$\begin{aligned} 4p + 2q + 3r + 2s &= 21 \\ 3p + 2q + 4r + s &= 18 \\ 2p + q + 3r + 4s &= 18 \\ 2p + 2q + 3r + s &= 15 \end{aligned}$$

**Exercise 5:** The  $(n+1)^{th}$  term in a Fibonacci series is given by:

$$T_{n+1} = 1/\sqrt{5} [ ((1+\sqrt{5})/2)^n - ((1-\sqrt{5})/2)^n ], \quad n=0,1,2,3,\dots$$

Display the first 10 terms of the series and find out the sum.

**Exercise 6:** Matrix A is given as:

$$A = [11, 12, 13, 14; 21, 22, 23, 24; 31, 32, 33, 34; 41, 42, 43, 44].$$

Do the following operation on the same:

- Interchange the first and 4<sup>th</sup> rows
- Interchange the 2<sup>nd</sup> and 3<sup>rd</sup> columns

- iii. Interchange the second row with the second column; you are allowed to use more than one line of code, if necessary.
- iv. Reset all the elements with odd row and column numbers to zero; rest of the elements must remain unchanged.
- v. Rearrange all the columns of the matrix A with their order changed to the sequence: 3, 1, 4, 2 (Ans: P = A(:, [3 1 4 2]) )
- vi. What will be the result of the following operation? Why?  
`>> P = A([1 3 4 2], [3 1 4 2])`

**Exercise 7:** Roots of polynomials appear in many engineering applications. Find the real root of the polynomial equation:

$$4x^5 + 3x^4 - 95x^3 + 5x^2 - 10x + 80 = 0$$

in the range  $-10 \leq x \leq 10$  by plotting the polynomial.

**Exercise 8:** Obtain graphically an approximate value of the roots of the following equation:

$$x = \sin(x) + \pi/2$$

**Exercise 9:** Plot the function  $y = e^{5t} - 1$  with the following plot annotation:

- i. Set the x-axis and y-axis tic labels with font size of 10 points
- ii. Write the x-label and y-label in the font-type Arial with italics faces.
- iii. Write the equation ( $y = e^{5t} - 1$ ) as a label adjacent to its plot.

**Exercise 10:** A complex function  $f(t)$  is defined by the equation:

$$f(t) = (3 - 2.5j)t - 5.5$$

Plot the amplitude and phase of the function as subplot for  $0 \leq t \leq 5$ .

**Exercise 11:** An electricity board charges the following rates to domestic users to discourage large consumption of energy:

- For the first 100 units – 40 paise per unit
- For the next 200 units – 50 paise per unit
- Beyond 300 units – 60 paise per unit.

All users are charged a minimum of Rs. 200. If the bill amount so estimated is more than Rs.250, then an additional surcharge of 15% (of bill amount) is added. Write a program to read number of units consumed and print the total electricity bill.

**Exercise 12:** Write the MATLAB script that checks whether a number entered by the user is a perfect number or not. (A perfect number is the one whose all the divisors sum up the number itself. For example, number 28 is a perfect number as  $1+2+4+7+14=28$ ).

**Exercise 13.** Consider the evaluation of the function  $\log(\frac{1}{1-x})$ . When  $x \geq 1$  the argument will be non-positive and "invalid". Create a function `invlog.m` using an if-construct that will evaluate the function and print either its value or an error message indicating the input is out of range.

**Exercise 14.** Write a function `cubert` that accepts an argument  $x$  and computes  $\sqrt[3]{x}$ . Your function should work with vector argument in addition to scalar argument, just as built-in MATLAB functions like `sqrt`. For example, `cubert([8 64])` should return a vector of the cube roots of 8 and 64.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **VIII**  
Subject: **MAJOR PROJECT**  
Total Practical Periods: **7 per week.**  
Total Marks in End Semester Exam: **100.**

Branch: **Information Technology.**  
Practical Code: **322824(33)**

## Guideline

### Allocation of project:

1. Information regarding broad area must be made available to the students well in advance (may be during previous semester).
2. Information must cover following parameters.
  - I. **Broad area:** Subject or expertise/application area.
  - II. **Required skills:** Knowledge of subject(s), software, tools & other characteristics.
  - III. **Type of project:** Hardware, software, design, survey, study based etc.
  - IV. **Guide available:** Name of Guide (S) from Department & Institute.
  - V. **Other related information** depending upon specific branch & institute.
3. It is also recommended to give proper counseling to pick up suitable project.
4. Students must get chance to select projects as per their choice or decided mutually between students and department faculty (HoD) concern.
5. One project group must contain maximum four students, however students can do project individually but it should be approved by department.
6. Compiled list of projects must be submitted to the University within 25 days of start of semester.
7. Compiled list may contain following parameters.

Sr. No.	Title of Project	Name of Students	Name of Guide

Name of HoD  
Signature of HoD

Signature of Principal

**Monitoring of project:**

1. It is recommended to give projects as per the specializations of existing faculty of the department instead of outside person/agency.
2. Project must be allocated, developed and monitored by department / institution itself, but not by outside agencies.
3. Regular review by guide is recommended to ensure development & contribution of students.

**Internal Evaluation & Submission of project:**

1. Evaluation of project would be as per the examination scheme of the University, which is based on internal as well as external evaluation.
2. Internal assessment requires submission of project report for getting approved by the concern authority. However printing and binding would be as per the conventional format.
3. Evaluation will be based on Live demonstration / presentation and Viva.
4. Final submission of project is expected as,
  - ✍✍ Submission of a copy to the University,
  - ✍✍ One copy to the Institution central library,
  - ✍✍ One copy to the department.

**External Evaluation:**

External assessment of project would be like conduction of practical exams of University, and must be executed as per the norms of practical exams.

*NOTE: Completion of Project outside the department/Institution should not be encouraged.*

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester: VIII**

**Subject : Report Writing and Seminar**

**Total No. of periods : 28**

**Total marks in End Semester Exam: Nil**

**Minimum Number of class test to be conducted: Two**

**Branch: Information Technology**

**Code: 300825 (33)**

**Total Tutorial Periods : Nil**

**Teacher's Assessment: 40 marks**

## **Unit -I**

**Introduction to Technical Writing:** how differs from other types of written communication Purpose of technical writing, Correspondence: prewriting, writing and rewriting Objectives of Technical Writing. Audience Recognition: High-tech audience, Low tech audience, Lay audience, Multiple Audience.

## **Unit - II**

**Correspondence:** Memos, Letters, E-mails, Its differentiation, types of letters, Document Design, its importance, Electronic Communication: Internet, Intranet, extranet, Writing effective e-mail.

## **Unit - III**

**Summary:** Report Strategies, Effective style of technical report writing: Structures: content, introduction, conclusions, references, etc., Presentation, Writing first draft, revising first draft, diagrams, graphs, tables, etc. report lay-out.

## **Unit -IV**

**Report Writing:** Criteria for report writing, Types of Report: Trip report, Progress report, lab report, Feasibility report, project report, incident report, etc. Case Studies.

## **Unit -V**

**Proposals & Presentation:** Title page, Cover letter, Table of Content, list of illustrations, summary, discussion, conclusion, references, glossary, appendix, Case Studies. Oral Presentation/ Seminar:

## **Text Books:**

1. Sharon J. Gerson & Steven M. Gerson "Technical Writing - Process& Product", Pearson Education.

## **Reference Books:**

1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman
3. Eisenberg, "Effective Technical Communication", Mc. Graw Hill.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII  
Subject :Enterprise Resource Planning  
Total Theory Periods : 40  
Total Marks in End Semester Exam : 80  
Minimum no. of class tests to be conducted : 2

Branch : Common to All Branches  
Code : 300881 (36)  
Total Tut Periods : 10

## UNIT-I

**Conceptual foundation of Business Process reengineering:** Role of information Technology and BPR; Process improvement and Process redesign, Process identification and mapping; Role/Activity diagrams, Process Visioning, and benchmarking.

[No of Periods: 8 + 2]

## UNIT -2

**Enterprise Resource Planning:** Evolution of ERP- MRP and MRP II, structure of ERP- two tier architecture, three tier architecture, Electronic data processing, management information system, Executive information system, ERP as an integrator of information needs at various Levels.

[No of Periods: 8 + 2]

## UNIT -3

**Typical Business Processes:** Core processes, Product control, Sales order processing, Purchases, Administrative processes, Human resource, Finance support processes, Marketing, Strategic planning, Research and development, Problems in traditional view.

[No of Periods: 8 + 2]

## UNIT -4

**ERP models/functionality:** Sales order processing, Production scheduling, forecasting, distribution, finance, features of each of the models, description of data flow across each module, overview of supporting databases & packages.

[No of Periods: 8 + 2]

## UNIT -5

**ERP implementation issues:** Opportunities and problems in ERP selection, and implementation; ERP implementation: identifying ERP benefits, team formation, Consultant intervention, Selection of ERP, Process of ERP.

[No of Periods: 8 + 2]

### Books:

1. V.K. GARG & N .K. VENKATKRISHNAN:, ERP, Concepts and Practices, PM
2. Rahul V. Altekar, Enterprise wide Resource Planning-theory and practice, PHI

### References:

1. ALEXIS LEON: Enterprise Resource Planning, TMH
2. S. SADAGOPAN: MIS, PM
3. V. RAJARAMAN: Analysis and Design of Information Systems, PHI
4. MONK' & BRADY: Concepts in ERP, Vikas pub, Thomson

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: **VIII**

Subject: **E-Commerce and Strategic IT**

Total Theory Periods: **50**

Total Marks in End Semester Exam: **80.**

Minimum number of class tests to be conducted: **02**

Branch: **Common to All Branches**

Code: **300882 (33)**

Total Tutorial Periods: **Nil**

**UNIT – I** Introduction: What is E-Commerce, Forces behind E-Commerce, E-Commerce Industry Framework, and Brief History of E-Commerce. Inter Organizational E-Commerce, Intra Organizational E-Commerce, and Consumer to Business Electronic Commerce, Architectural framework

## *Unit – II*

Network Infrastructure : LAN, Ethernet(IEEE standard 802.3) LAN , WAN , Internet, TCP/IP Reference Model, Domain Name Server , Internet Industry Structure,

## **UNIT – III**

Electronic payment systems, types of electronic payment systems, digital token-based electronic payment systems, smart cards & electronic payment systems, credit card based electronic payment systems, risk and electronic payment systems, designing electronic payment systems.

## **UNIT – IV**

Information Distribution and Messaging: FTP,E-Mail,WWW server,HTTP, Web service implementation, Information publishing , Web Browsers, HTML, Common Gateway Interface

**UNIT – V** Mobile & wireless computing fundamentals, mobile computing framework, wireless delivery technology and switching methods, mobile information access devices, mobile data internetworking standards, cellular data communication protocols, mobile computing applications, personal communication service.

## **BOOKS :**

1. Frontiers of E-commerce by Kalakota & Whinston (Addison-wesley) E-business roadmap for success by Dr. Ravi Kalakota & Marcia Robinson ( addision wesicy)
2. Electronic Commerce By Bharat Bhasker (TMH)

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject Name: Technology Management

Total Theory periods: 40

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 02

Branch: **Common to All Branches**

Subject Code: 300883 (36)

Total Tutorial periods: 10

## **Unit I**

Technology: - Definitions, Types and Characteristics, Management of Technology (MOT), Technological Environment, Parameters of Technological Environment; Science & Technology in India.

[No of Periods: 8 + 2]

## **Unit II**

Innovation Management: - Invention v/s Innovation, Definition and components of innovation. Types of innovations: Product, Process and system innovations, Understanding Innovation Process.

[No of Periods: 8+ 2]

## **Unit III**

Technology life cycle, Technology evolution and S-curves of Technology Evolution, Technology Diffusion, Dynamics of Diffusion, Mechanism of Diffusion.

[No of Periods: 8 + 2]

## **Unit IV**

Technology strategies & Intelligence: Technology Strategy & types, Models for technology strategy formulation Definition of Technology Intelligence, Technology Audit, Process of Technology Intelligence: Technology Scanning, Monitoring, Forecasting and Assessment.

[No of Periods: 8 + 2]

## **Unit V**

Acquisition and technology transfer. Over view of - GATT, Intellectual property rights (IPR)

[No of Periods: 8 + 2]

## **Texts Books:**

1. V. K. Narayanan, "Managing Technology and Innovation for competitive advantage", Pearson Education.
2. Tarek Khalil, "Management of Technology", McGraw Hill.

## **Reference Books:**

1. Lowell Steele, "Managing Technology", McGraw Hill.
2. R. A. Burgelman and M. A. Maidique, "Strategic Management of Technology and Innovation", Irwin.
3. Plsek, Creativity, Innovation and Quality, PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

**Semester: VIII**

**Subject: Decision Support and Executive Information System**

**Total Theory Periods: 50**

**Total Marks in End Semester Exam: 80.**

**Minimum number of class tests to be conducted: 02.**

**Branch: Common to all Branches**

**Code: 300884(33)**

**Total Tut Periods: Nil.**

## **UNIT-I Decision Support System:**

What is a DSS, Decision Making Rational Decisions, Definitions of Rationality, Bounded Rationality and Muddling Through, The Nature of Managers, Appropriate Data Support, Information Processing Models, Group Decision Making?

## **UNIT-II Component OF DSS:**

Data Component : Information and its Usefulness, Characteristics of Information, Databases to Support Decision Making, Database Management Systems, Data Warehouses, Data Mining and Intelligent Agents  
Model Component:-Models Representation Methodology, TimeModel Based ManagementSystems, Access to Models Understandability of Results, Integrating Models Sensitivity of aDecision,  
Brainstorming and Alternative Generation, Evaluating Alternatives, Running External Models.  
Mail Component: Integration of Mail Management Examples of Use implications for DSS.

## **Unit-III Intelligence and Decision Support Systems:**

Programming Reasoning, Backward Chaining Reasoning, Forward Chaining Reasoning, Comparison, Certainty Factors, User-Interface Component: User Interface Components, The Action Language, Menus, Command Language, I/O Structured Formats, Free Form Natural Language, The Display or Presentation Language, Windowing Representations, Perceived Ownership of Analyses, Graphs and Bias Support for All Phases of Decision Making, The Knowledge Base Modes of Communication

**Unit-IV Designing A DSS:** Planning for DSS, Designing a Specific DSS, Interviewing Techniques, Other Techniques, Situational Analysis Design Approaches, Systems Built from Scratch, Using Technology to Form the Basis of the DSS, Evaluating a DSS Generator, Using a DSS Generator, The Design Team, DSS Design and Re-engineering Discussion .

**Unit-V Implementation and Evaluation of DSS :** Implementation Strategy , Prototypes, Interviewing , User Involvement , Commitment to Change, Managing Change, Institutionalize System, Implementation and System Evaluation, Technical Appropriateness, Measurement Challenges , Organizational Appropriateness.

## **Name Of Text Books:-**

Decision Support System By Vicki I Sauter

Management Information system-Gerald V. Post & David L. Anderson

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: Software Technology

Total Theory Periods: 4 per week.

Total Marks in End Semester Exam: 80.

Minimum number of class tests to be conducted: 02.

Branch: **Common to All Branches.**

Code: 300885 (22)

Total Tut Periods: Nil.

## UNIT-1

### ASSEMBLY LANGUAGE PROGRAMMING

Pentium Assembly languages-Registers, Memory Model, Addressing mode, 1source Link, Installation, Assembler Directives.

#### ASSEMBLER DESIGN

Simple manual Assembler, Assembler Design Process, Load and Go Assembler, Object File Formats.

## UNIT-2

### LINKERS

Linking -Combining Object Modules, Pass I, Pass II; Library Linking; Position Independent Code (PIC); Shared Library Linking.

LOADERS- Binary Image; Types of Loaders.

## UNIT 3

### MACROPROCESSORS

Macro in NASM- Local Labels in Macro Body, Nested Macros.; Design of Macroprocessors – Major Data Structures, Macroprocessing Technique, Simple macroprocessors without nesting, Nested calls & definitions

## UNIT – 4

### COMPILERS

Lexical Analysis; Syntax Analysis; Intermediate Code Generation; Target Code Generation; Optimizing Transformation

## UNIT – 5

### TEXT EDITORS

Design of a Text Editor ; Data Structures for Text Sequences; Text Document Design; Text view Design

#### DEBUGGER

Features; Breakpoint mechanism; Hardware support; context of Debugger; Check pointing & reverse Execution

### Textbooks

1. SYSTEM SOFTWARE by Santanu Chattopadhyay ; Prentice Hall of India
2. Software Engineering By Roger S Pressman ; Mc-Graw Hill

### References

1. Foundations of Software Technology and Theoretical Computer Science, By V. (Venkatesh) Raman: Springer
2. Software Visualization by John Stasko; MIT press
3. Software Engineering By Rajib Mall : PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII  
Subject: Knowledge Entrepreneurship  
Total Theory Periods: 40  
Total Marks in End Semester Exam:80  
Minimum no. of class tests to be conducted: 2

Branch: Common to All Branches  
Code: 300886 (36)  
Total Tut Periods: 12

## **Unit – I**

**Introduction:** Entrepreneurship in Knowledge economy, abundant & accessible information, implication, impact & consequence, knowledge based opportunities, aims, scope, and objectives.

## **Unit-II**

### **Managing knowledge & intellectual capital:**

Knowledge management, loss of knowledge, knowledge implementation, knowledge creation, property intellectual capital.

## **Unit-III**

### **Contemporary information problems:**

Information overload, winning & losing barrier to entry, emerging issues, customers, investors, myth of inevitable program.

## **Unit-IV**

Creating enterprise cultures:

Working with employer, organizing for entrepreneurship, unity & diversity, ten essential freedoms, freedom of operation, effective issue monitoring, establish search criteria.

## **Unit-V**

### **Becoming a knowledge entrepreneur:**

Entrepreneur qualities, knowledge entrepreneur, challenge of launching new product, creating launch support tool, examples of best practice.

## **Text & Reference Books**

Amrit Tiwana ,The Knowledge Management tool kit, Pearson Education.

Lunlin Conlson, Knowledge Entrepreneur, Thomas Press.

Catheriue L Mann, Knowledge entrepreneurship, Oxford

Heinke Robkern ,Knowledge entrepreneurship,.

Bonnie Montano,Knowledge Management, , IRM Press, London

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY**  
**BHILAI (C.G.)**

Semester: VIII  
Subject: Financial Management  
Total Theory Periods: 3  
Total Marks in End Semester Exam: 80  
Minimum No. Of Class test to be conducted: 2

Branch: **Common to All Branches**  
Code: 300887(36)  
Total tutorial Period: 12

**UNIT I**

Financial Management –an overview: Introduction, finance and other disciplines, objectives and scope of financial management, role and responsibility of finance manager.

[No of Periods: 8 + 2]

**UNIT II**

Working capital management-nature, need, importance and concept of working capital, trade off between profitability and risk, Determining finance mix.

[No of Periods: 8 + 2]

**UNIT III**

Inventory management-Introduction, objectives, ordering cost, carrying cost, lead time, economic order quantity and safety stock, deterministic model.

[No of Periods: 8 + 2]

**UNIT IV**

Management of cash-introduction motives for holding cash, objectives of cash management and technique/process of cash management.

[No of Periods: 8 + 2]

**UNIT V**

Receivables management-introduction, objectives, credit terms, credit policies and collection policies.

[No of Periods: 8 + 2]

**Text books:**

Basic financial management, M Y Khan and P K Jain, TMH  
Financial Management, I M Pandey.

**References books:**

Financial management and policy, V K Bhalla, Anmol publications pvt. Ltd.  
Financial management, Van Horne.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester : VIII  
Subject : Project planning management and Evaluation  
Total Theory Periods : 40  
Total Marks in End Semester Exam :80  
Minimum No. Of Class test to be conducted : 2

Branch : **Common to All Branches**  
Code : 300888 (36)  
Total tutorial Period : 12

## **UNIT I**

Identification of projects-generation and screening of idea, monitoring corporate appraisal, preparing project profiles and project rating index.

## **UNIT II**

Feasibility studies: Market and demand analysis, technical analysis, financial analysis and economic viability.

## **UNIT III**

Project appraisal: Criteria, net present value, internal rate of return, payback period and accounting rate of return method.

## **UNIT IV**

Project management and implementation-  
Project planning, project control, prerequisites of implementation. Network techniques of project management-Project evaluation and review technique (PERT) and critical path method (CPM).

## **UNIT V**

Project review and control-  
Initial review, performance evaluation, abandonment analysis and its behavioral issues.

### **Text books:**

Project planning, analysis, selection, implementation and review by Prasanna Chandra, TMH.

Reference Books:

Project management-Dr. Harold Kerzner.

Total Project management-Dr. P K Macmillan.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: VIII

Branch: **Common to All Branches**

Subject: **Safety Engineering**

Code: 300889 (37)

Total Theory Periods: 50

Total Tutorial Period : 12

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 2

## **UNIT – I**

Safety Philosophy and principles of Accident prevention

Introduction, accident, injury, unsafe act, unsafe condition, reportable accidents, need for safety, break down of accidents, hazardous industries.

Theories & Principle of accidents

Casualty, cost of accident, computation of cost, utility of cost data.

Accident reporting & Investigation

Identification of the key facts, corrective actions, classification of facts.

Regulation

American (OSHA) and Indian Regulation.

## **UNIT – II**

Safety Management

Division of responsibility, Location of Safety function, size of safety department, qualification for safety specialist, safety committee – structure and functions.

## **UNIT – III**

Safe Working Condition and Their Development

SOP for various Mechanical equipments, Incidental safety devices and methods, statutory of provisions related to safeguarding of Machinery and working condition.

## **UNIT – IV**

Safety in Operation and Maintenance

Operational activities and hazards, starting and shut down procedures, safe operation of pumps, compressor, heaters, reactors, work permit system, entry into confined spaces.

## **UNIT – V**

Safety in Storage and Emergency Planning

Safety in storage, handling of chemicals and gases, storage layout, ventilation, safety in chemical laboratories, emergency preparedness on site plan, off site plan, toxic hazard control.

## **TEXT BOOKS**

Safety and Accident Prevention in Chemical Operation – H.H. Fawcett and Wood

Personal Protective Equipment – NSC Bombay

## **REFERENCE BOOKS**

Ergonomics - P. Krishna Murthy

Fire Prevention Hand Book – Derek James

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: Bioinformatics

Total Theory Periods: 4 per week.

Total Marks in End Semester Exam: 80.

Minimum number of class tests to be conducted: 02.

Branch: **Common to All Branches**

Code: 300890 (22)

Total Tut Periods: Nil.

## UNIT-1

Bioinformatics-introduction, Application, Data Bases and Data Management, Central Dogma; information search and Data retrieval, Genome Analysis and Gene mapping- Analysis, Mapping, Human Genome Project (HGP).

## UNIT-2

Alignment of Pairs and Sequences; Alignment of Multiple Sequences and Phylogenetic Analysis; Tools for similarity Search and Sequence Alignment- FASTA BLAST.

## UNIT-3

Profiles and Hidden Markov Models (HMMs); Gene Identification and Prediction-Basics, Pattern Recognition, Methods and Tools; Gene Expression and Micro arrays.

## UNIT-4

Protein Classification and Structure Visualization; Protein Structure Prediction; Proteomics; Computational methods-Analysis of Pathways, Metabolic Network Properties, Metabolic Control Analysis, Stimulation of Cellular Activities, Biological Mark Up Languages.

## UNIT-5

Drug Discovery-Introduction, Technology and Strategies, Cell Cycle, G-protein, Coupled, Receptors. Computer Aided Drug Design-Introduction, Drug Design Approaches, Designing methods, ADME-Tox Property Prediction.

## TEXT BOOKS

- I. BIOINFORMATICS by S.C. Rastogy, 2<sup>nd</sup> Edition, Prentice Hall of India.
- II. BIOINFORMATICS by V. R Srinivas, Prentice Hall of India

## REFERENCES

1. BIOINFORMATIC COMPUTING by Bergeron, MIT Press.
2. Evolutionary Computation in Bioinformatics, Gary B. Fogel, David W. Corne (Editors), 2002
3. Introduction to Bioinformatics, Arthur M. Lesk, 2002, Oxford University Press
4. Current Topics in Computational Molecular Biology (Computational Molecular Biology), Tao Jiang, Ying Xu, Michael Zhang (Editors), 2002, MIT Press

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: VIII  
Subject: Energy Conservation & Management  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 2

Branch: **Common to All Branches**  
Code: 300891 (37)  
Total Tutorial Period : 12

## UNIT – I

### Energy Scenario

Commercial and Non-commercial energy, primary energy resources, commercial energy production, final energy consumption, energy needs of growing economy, long term energy scenario, energy pricing, energy sector reforms, energy and environment, energy security, energy conservation and its importance, re-structuring of the energy supply sector, energy strategy for the future, air pollution, climate change, Energy Conservation Act – 2001 and its features.

## UNIT – II

### Energy Conservation in Electric Utility and Industry

Energy costs and two-part tariff, Energy conservation in utility by improving load factor, Load curve analysis, Energy efficient motors, Energy conservation in illumination systems, Importance of Power factor in energy conservation – Power factor improvement methods, Energy conservation in industries, case studies.

## UNIT – III

### Energy in Manufacturing

Introduction, Energy and Environmental Analysis of Products, Energy Consumption in Manufacturing, Energy Conservation, Transportation Systems, Water Conservation, Rules for the Efficient Conservation of Energy and Materials, Laws of Energy and Materials Flows.

## UNIT – IV

### Heat Recovery System

Sources of waste heat and its potential applications, heat recovery systems in Shell & Tube Heat Exchangers, Plate Heat Exchangers, Tubular Heat Exchangers. Vapour recompression and Energy conservation in Evaporator systems. Thermal Wheel, Heat Pipe, Heat Pumps. Waste Heat Boilers – Low Pressure & High Pressure Applications.

## UNIT – V

### Energy Conservation Economics

Basic discounting, life cycle costing and other methods, factors affecting economics, energy pricing and incentives for conservation, energy conservation of available work identification of irreversible processes, primary energy sources, Optimum use of prime movers, energy efficient house keeping, energy recovery in thermal systems, waste systems and waste heat recovery in thermal systems, waste heat recovery techniques, conservation in energy intensive industries, thermal insulation.

## TEXT BOOKS

1. Energy Management – W.R. Murphy, G. McKay –
2. Energy Management – Paul O'Callaghan –
3. Engineering Economics & Engineering Management – R. Raju – Anuradha Agencies

## REFERENCE BOOKS

1. Principles of Energy Conversion – Archie W. Culp – Jr. International Student Edition – McGraw Hill Publishers
2. Energy Management in illuminating System – Kao Chen – CRC Publishers
3. Industrial Energy Recovery - D.A. Reay – Wiley Publishers
4. Thermal Energy Recovery – T.L. Boyer – Wiley Publishers
5. Energy Conservation Through Control – E.G. Shinsky – Academic Press
6. Economics of Solar Energy & Conservation Systems, Vol-I & II – F. Kreith & R.E. West – CRC Press

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY  
BHILAI (C.G.)**

Semester: VIII  
Subject: Nanotechnology  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum No. of Class test to be conducted:2

Branch: Common to All Branches  
Code: 300892 (47)  
Total tutorial Period: NIL

**Unit I :** Introduction to nanotechnology: background, definition , basic ideas about atoms and molecules, physics of solid state, review of properties of matter and quantum mechanics

**Unit II :** Preparation of Nanostructured Materials : Lithography : nanoscale lithography, E-beam lithography, dip pen lithography, nanosphere lithography. Sol gel technique Molecular synthesis, Self-assembly, Polymerization

**Unit III :** Characterization of Nanostructured materials : Microscopy: TEM, SEM, SPM techniques, confocal scanning microscopy,, Raman microscopy-Basic principles, applicability and practice to colloidal, macromolecular and thin film systems. Sample preparation and artifacts. Polymer fractionation techniques: SEC, FFF, Gel electrophoresis.: Basic theory, principles and practice.  
Thermal analysis: Basic principles, theory and practice. Micro DSC in the study of phase behavior and conformational change.  
Mass spectrometry of polymers: MALDI TOF MS – Basic theory, principles and practice. Applicability to proteins, polyethers, controlled architecture systems

**Unit IV :** Cross-cutting Areas of Application of Nanotechnology : Energy storage, Production and Conversion. Agriculture productivity enhancement Water treatment and remediation. Disease diagnosis and screening. Drug delivery systems. Food processing and storage. Air pollution and remediation. Construction. Health monitoring..Vector and pest detection, and control. Biomedical applications. Molecular electronics. Nanophotonics. Emerging trends in applications of nanotechnology

**Unit V :** Industrial Implications of Nanotechnology : Development of carbon nanotube based composites. Nanocrystalline silver Antistatic conductive coatings. Nanometric powders. Sintered ceramics. Nanoparticle ZnO and TiO<sub>2</sub> for sun barrier products. Quantum dots for biomarkers. Sensors. Molecular electronics. Other significant implications

**References:**

1. Guozhong Cao, "Nanostructures and Nanomaterials", Imperial College Press, London
2. Mark Ratner and Daniel Ratner, "A Gentle Introduction to Next Big Thing", Pearson Education 2005

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY  
BHILAI (C.G.)**

Semester: VIII

Subject: Intellectual Property Rights

Total Theory Periods: 40

Total Marks in End Semester Exam: 80

Minimum No. Of Class test to be conducted:2

Branch: **Common to All Branches**

Code: 300893 (36)

Total tutorial Period: 12

**Unit-I**

Basic Concepts of Intellectual Property: Introduction to intellectual property rights, laws and its Scope, Trade Related Aspects of Intellectual Property Rights.

**Unit-II**

Patents: Introduction to patent law and condition for patentability, Procedure for obtaining patents, Rights of a patentee, Patent infringements, Biotechnology patents and patents on computer programs, Patents from an international perspective.

**Unit-III**

Trademark and 'geographical Indications: Statutory authorities and registration procedure, Rights conferred by registration, Licensing, assignment and transfer of trademark rights, Trademark infringement, Geographical Indication of Goods & Appellations of Origin.

**Unit-IV**

Copyright: Registration procedure and copyright authorities, Assignment and transfer of copyright, copyright infringement and exceptions to infringement, Software copyright

**Unit-V**

Introduction to the law on Industrial Designs, Registration and piracy, International perspective, Introduction to the law on semiconductor layout design, Registration, commercial exploitation and infringement.

**Text Books:**

1. Vinod V Sople ,Managing Intellectual Property, – PHI
2. Kumar K ,Cyber law, intellectual property and ecommerce security, Dominant Publication and distribution, New Delhi.

**Reference Books:**

1. Inventors Guide to Trademarks and Patents- Craig Fellenstein, Rachel Ralson- Pearson Education.
2. Intellectual Property –David Bainbridge, Longman

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY  
BHILAI (C.G.)**

Semester: VIII

Branch: **Common to All Branches** Subject: Value

Engineering

Code: 300894 (37)

Total Theory Periods: 50

Total Tutorial Period: 12

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 2

**UNIT – I**

**Basic Concepts**

Meaning of the term value, basic kind, reasons for poor value, value addition, origin and history. Benefits, relevance in Indian scenario.

**UNIT – II**

**Techniques**

Different techniques, organizing value engineering study, value engineering and quality.

**UNIT – III**

**Job Plan**

Different phases, General phase, Information phase, Functional Phase, Creation Phase, Evaluation Phase, Investigation Phase, Implementation Phase, Audit.

**UNIT – IV**

**Selection of evaluation of VE Projects**

Project selection, method selection, value standard, application of methodology.

**UNIT – V**

**Value Engineering Program**

VE operations in maintenance and repair activities, VE Cost, life cycle, cost model, training for VE, general value engineering, case studies.

**TEXT BOOKS**

Value Engineering – S.S. Iyer – New Age International Publishers, New Delhi

Industrial Engineering & Management – O.P. Khanna – Dhanpat Rai & Sons

**REFERENCES**

Techniques of Value Analysis and Engineering – L.D. Miles – McGraw Hill, New York

Value Engineering, A Systematic Approach – A.E. Mudge – McGraw Hill, New York

Compendium on Value Engineering – H.G. Tufty – Indo American Society

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VIII  
Subject: Disaster Management  
Total Theory Periods: 40  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 2

Branch: **Common to All Branches**  
Code: 300895 (20)  
Total Tutorial Periods: 12

## **Unit 1**

Nature of disasters – natural and other disasters, Earthquakes, floods, draught, cyclones, fire and other environmental disasters.

## **Unit 2**

Behaviour of structures in disaster prone areas, Disaster zoning, Hazard assessment, Environmental Impact Assessment

## **Unit 3**

Methods of mitigating damage during disasters, disaster preparedness.

## **Unit 4**

Management systems during disasters, Construction Technology for mitigation of damage of structures.

## **Unit 5**

Short-term and long-term relief measures.

### **Name of Text Books:**

Design of Earthquake Resistant Buildings – Minoru Wakabayashi (McGraw Hill Publication)  
Dynamics of Structures: Theory and Application to Earthquake Engineering (2<sup>nd</sup> edition) – Anil K Chopra (Pearson Education Publication)

### **Name of Reference Books:**

Fundamentals of Vibrations – Anderson, R.A. (Mc Millan)  
IS – 1893 (Part I): 2002, IS – 13920: 1993, IS – 4326: 1993, IS-13828: 1993  
Earth quake engineering damage assessment and structural design – S.F. Borg  
Disasters and development – Cuny F (Oxford University Press Publication)

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VIII

Subject: Construction Management

Total Theory Periods: 40

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 2

Branch: **Common to All Branches**

Code: 300896 (20)

Total Tutorial Periods: 12

## **Unit 1**

### **The Owner's Perspective**

Introduction-The project life cycle-Major Types of Construction-Selection of Professional Services-Construction contractors-Financing of constructed facilities-Legal and regulatory Requirements-The changing Environment of the construction Industry-The Role Project Managers

## **Unit 2**

### **Organizing for Project Management**

What is project management? – Trends in Modern Management-Strategic planning and project programming- Effects of project risks on organization-Organization of Project Participants-Traditional designer-Constructor sequence-Professional construction management-Owner-Builder-Operation-Turnkey operation-Leadership and Motivation for the Project team-Interpersonal behaviour in project organization-perceptions of Owners and Contractors

## **Unit 3**

### **The Design and Construction Process**

Design and construction as an integrated system-Innovation and technological Feasibility-Innovation and technological feasibility-Design Methodology-Functional Design-Physical Structures-Geo-Technical Engineering Investigation-Construction Site Environment-Value engineering-Construction Planning-Industrialized Construction and Prefabrication-Computer -Aided Engineering

## **Unit 4**

### **Labour, Material and Equipment Utilization**

Historical Perspective – Labour Productivity-Factors Affecting Job-Site Productivity-Labor Relations in construction-Problems in collective bargaining-Materials Management-Materials Procurement and Delivery-Inventory control-Tradeoffs of cost in Material Management-Construction Equipment-Choice of Equipment and Standard production Rates-Construction Processes Queues and Resource Bottlenecks

## **Unit 5**

### **Cost Estimation**

Costs Associated with Construction Facilities-Approaches to cost estimation-Type of construction cost estimates- Effects of scale on construction cost-Unit cost-Method of estimation-Methods for allocation of joint costs- Historical cost data-Cost indices-Applications of cost Indices to Estimating-Estimate based on Engineers List of Quantities-Allocation of Construction costs over time-Computer Aided cost Estimation-Estimation of operating costs

### **Name of Text Books:**

Construction Project Management Planning, Scheduling and Control – Chitkara, K.K. (Tata McGraw Hill Publishing Co., New Delhi, 1998)

Project Management: A systems Approach to Planning, Scheduling and Controlling – Harold Kerzner (CBS Publishers & Distributors, Delhi, 1988)

### **Name of Reference Books:**

Project management for Construction: Fundamental Concepts for owners, Engineers, Architects and Builders – Chris Hendrickson and Tung Au, (Prentice Hall, Pittsburgh, 2000)

Construction Project Management – Frederick E.Gould (Wentworth Institute of Technology, Vary E.Joyce, Massachusetts Institute of Technology, 2000)

Project Management – Choudhury, S. (Tata McGraw Hill Publishing Co., New Delhi, 1988)

Applied project Engineering and Management – Ernest E. Ludwig (Gulf Publishing Co., Houston, Texas, 1988)

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VIII

Branch: **Common to All Branches**

Subject: Ecology and Sustainable Development

Code: 300897 (20)

Total Theory Periods: 40

Total Tutorial Periods: 12

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 2

## **Unit 1**

### **Nature of ecology and sustainable development**

Definition, scope of ecology and sustainable development, geomorphology, oceanography, climatology and biogeography.

## **Unit 2**

### **Energy and environment**

Introduction of energy environment, use of solar cells for heating and operated drills, methane gas digesters, environmentally friendly method of energy conservation, difference between conventional and non-conventional energy sources, future trends of energy systems.

## **Unit 3**

### **Theory of isostasy**

Concept of isostasy for sustainable development, discovery of the concept, concept of Hayford and Bowie, Joly, and Holmes, Global isostatic adjustment.

## **Unit 4**

### **Physical geography and man human impact on the natural environment**

Modification of land forms, direct alternation of land forms, wind deflation, coastal erosion and deposition, modification of the atmosphere, ultration process in eco and energy systems.

## **Unit 5**

### **Obstacles in sustainable development**

Pollution growth, species extinction, restriction of bat lands, desertification, soil erosion, soil pollution, characterisation of contaminated soil, global warming and ozone depletion etc.

### **Name of Text Books:**

Energy and environment – Fowler (McGraw Hill, New Delhi)

Restoration Ecology and sustainable development – Krystyna M. Urbanska et.al. (Cambridge University Press, U.K.)

### **Name of Reference Books:**

Reuniting Economy and Ecology in Sustainable Development – Russ Beaton et.al. (-----)

Theory and implementation of economic models for sustainable development – Jeroen C.J.M. Van Den Bergh (-----)

Economy and Ecology: Towards sustainable development – F. Archibugi et.al. (-----)

Evaluating Sustainable Development: Giving People a voice in their destiny – Okechukwu Ukaga et.al. (-----)

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII

Subject: Non Conventional Energy Sources

Total Theory Periods: 50

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 02

Note: Internal Choice may be given in any three units.

Branch: **Common to All Branches**

Code : 300898 (19)

Total Tutorial Periods: 00

## Unit I

Environmental Aspects of Power Generation, Heat Transfer for Solar Energy, Utilization Flat Plate Collectors: Physical principles of conversion of solar radiation into heat, Thermal losses and efficiency of FPC, Practical considerations for flat plate collectors, Applications of FPC – Water heating and drying .Focusing Type Collectors: Orientation and sun tracking systems, Types of concentrating collectors – Cylindrical parabolic collector, Compound parabolic collector, Thermal performance of focusing collectors, Testing of solar collectors.

## Unit II

Solar cooking, solar desalination, solar ponds and solar space heating Solar Industrial process heating and Solar power generation. Solar Green Houses, Solar thermo mechanical power, solar refrigeration & air conditioning and Solar High Temperature Applications Gasifier- Classification, Chemistry, Application, advantages, disadvantages and application.

## Unit III

Energy from Biomass: Type of biomass sources, biomass generation, factors affecting biodigestion, classification, advantages and disadvantages of biogas plants, community biogas plants, problems related to biogas plants, utilization of biogas. Energy plantation, methods for obtaining energy from biomass, thermal gasification of biomass.

## Unit IV

Chemical Energy Sources: Fuel cells: Design, principle, classification, types, advantages and disadvantages Hydrogen Energy: Properties of hydrogen, methods of hydrogen production, physical and chemical principles, storage, advantages and application

## Unit V

Wind Energy: Basic principle, wind energy conversion, wind energy conversion systems, design consideration, performance and application. Alcohol fuels: Overview, feedstock, methods for alcohol production, alcohol as an engine fuel; LPG, CNG Hydrogen and Ethanol as an alternative liquid fuel; engine performance with alcohol fuels. Tidal Energy.

### Name of Text Books:

1. John A Duffie & William A Beckman: Solar Energy Thermal processes Wiley Inter science publication
2. H P Garg & J Prakash, Solar Energy – Fundamentals and Applications: - Wiley Inter science

### Name of Reference Books:

1. G D Rai, Solar Energy Utilization – Khanna publishers.
2. S P Sukhatme, Solar Energy – Principles of thermal Collection & Storage – Tata McGraw Hill Publishing company ltd., New Delhi

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII

Subject: Energy Auditing

Total Theory Periods: 50

Total Marks in End Semester Exam: 80

Minimum number of Class tests to be conducted: 2

Branch: **Common to All Branches**

Code: 300899 (24)

Total Tut Periods: Nil

## **UNIT I:**

History of Energy Management: Energy forecasting, Limitations of energy resources. Renewable energy resources. Load management. Energy management. Demand side management (DSM) Energy conservation in realistic distribution system. Short term load forecasting for de-centralized load management.

## **UNIT II:**

Energy Situation and Global Energy Sources: World energy consumption. Energy in developing countries. Firewood crises. Indian energy sources. Non-conventional renewable energy sources. Potential of renewable energy sources. Solar energy types. Wind energy. Wave, tidal and OTEC. Super-conductors in power system. Wind power generation for large scale generation of electricity. Wind driven induction generators.

## **UNIT III:**

Energy Auditing as Applicable to an Industry: Classification of energy audit System optimization. Power factor improvement. Preventive maintenance. Process modification. Non-conventional energy sources. Electricity tariffs. Types of off-peak tariffs.

## **UNIT IV:**

Elements of Energy Auditing and Metering Methodologies(Case Studies): Capacity utilization. Technology up-gradation. Fine tuning, Energy conservation. Concept and methods of energy conservation.

## **UNIT V:**

Demand Side Management: Introduction to DSM. Concept of DSM. Benefits from DSM. DSM techniques. Time of day pricing, Multi-utility exchange model. Time of day pricing models for planning, load management. Load priority technique. Peak clipping. Peak shifting. Valley filling. Strategic conservation. Energy efficient equipment, Socioeconomic awareness programs.

## **Text Books:**

1. Ashok.V.Desai(ED)-Energy Demand: Analysis, Management and Conservation, Wiley Eastern Ltd., New Delhi.
2. S. Rao, Parulekar, Energy technology, Khanna Pbs.

## **Reference Books:**

1. Jyothi Prakash- Demand Side Management, Tata McGraw-Hill Publishers.
2. N.K.Bansal, Kleeman Millin-Renewable Energy Sources and Conservation Technology, Tata McGraw-Hill Publishers.