

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

## SCHEME OF TEACHING AND EXAMINATION

### SEMESTER VIII CHEMICAL ENGINEERING

S. No	Board of study	Subject Code	Subject	Period per week			Scheme of Exam Theory/ Practical			Total Marks	Credit $\frac{L+(T+P)}{2}$
				L	T	P	ESE	CT	TA		
1	Chemical Engg	319811 (19)	Process Equipment Design-III	4	1	-	80	20	20	120	5
2	Chemical Engg	319812 (19)	Fluidization Engg.	3	1	-	80	20	20	120	4
3	Chemical Engg	319813 (19)	Process Dynamics and Control	4	1	-	80	20	20	120	5
4	<b>Refer Table -III</b>		Professional Elective-III	4	0	-	80	20	20	120	4
5	<b>Refer Table-IV</b>		Open Elective-IV	4	0	-	80	20	20	120	4
6	Chemical Engg	319821 (19)	Process Equipment Design-III Viva	-	-	3	40	-	20	60	2
7	Chemical Engg	319822 (19)	Fluidization Engg. Lab	-	-	3	40	-	20	60	2
8	Chemical Engg	319823 (19)	Process Dynamics and Control Lab	-	-	3	40	-	20	60	2
9	Chemical Engg	319824 (19)	Major Project	-	-	6	100	-	80	180	3
10	Chemical Engg	300825 (19)	Report Writing and Seminar	-	-	2	-	-	40	40	1
11			Library	-	-	1					-
<b>Total</b>				<b>19</b>	<b>3</b>	<b>18</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 Exam    TA- Teacher's Assessment

**Table – III**

Professional Elective-III		
Board of Study	Subject Code	Subject
Chemical Engg	319871 ( 19 )	Modeling and Simulation
Chemical Engg	319872 ( 19 ).	Process Engg. & Costing
Chemical Engg	319873 (19)	Sugar Technology
Chemical Engg	319874 (19)	Pulp and Paper Technology

Note (1)-  $\frac{1}{4}$ <sup>th</sup> of total strength of students subject to minimum of 20 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 can not be change in future examinations.

**Table –4**

<b>Open Elective -4</b>			
<b>S.No.</b>	<b>Board of Studies</b>	<b>Code</b>	<b>Name of Subject</b>
1	Management	300881 (36)	Enterprise Resource Planning
2	Information Technology	300882 (33)	E-Commerce & strategic IT
3	Management	300883 (36)	Technology Management
4	Information Technology	300884 (33)	Decision Support & Executive Information system
5	Computer Science & Engg.	300885 (22)	Software Technology
6	Management	300886 (36)	Knowledge Entrepreneurship
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 Conservation & Management
12	Nanotechnology	300892 (47)	Nanotechnology
13	Management	300893 (36)	Intellectual Property Rights
14	Mechanical 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 Sources
19	Electrical Engg.	300899 (24)	Energy Auditing and Management

**Note (1) –** 1/4<sup>th</sup> of total strength of students subject to minimum 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 in future examinations.

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

Semester: B. E. Eighth  
Subject: Pulp and Paper Technology  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering  
Code: 319874 (19)  
Total Tutorial Periods: Nil

**Unit I** Pulping: Kraft Pulping – Introduction, Overview of Pulping Operation, Digesters, batch and continuous, direct and indirect heating, reaction kinetics, H-factor, transport phenomena during pulping, G factor, extended delignification, rapid displacement heating (RDH), blow heat recovery.

Washing – Introduction, Transport Phenomena during washing – diffusion vs. displacement, single and multistage washing, counter current rotary drum washers, dilution factor, displacement ratio, washing capacity and efficiency, soda loss, material and flow balances for systems with recycle.

**Unit II** Screening and Cleaning – Introduction, Objectives and Theory, Screening system process design, Centrifugal Cleaners – forward and reverse cleaners, principles of operation, drag vs centrifugal force, design and operating parameters, screening and cleaning efficiency for multistage systems, material and flow balances for systems with recycle.

Bleaching – Transport phenomena during bleaching, mixers, pumps, bleach tower design and operation, up flow vs down flow towers, washing after bleaching

**Unit III** Chemical Recovery – Kraft Recovery Process, Introduction, Overview of Kraft recovery, recovery cycle, properties of black liquor – composition, density or specific gravity, total solids, viscosity, thermal conductivity, specific heat, boiling point, boiling point rise (BPR), heating value – higher and lower heating value; evaporation, process requirements, single effect and multiple effect evaporators (MEE), mass and energy balances in MEE, multiple effect analysis – capacity, steam economy. Vapor Recompression Evaporators. Scaling and Scale Control.

**Unit IV** Chemical Recovery – Black Liquor combustion – basic process steps – drying, pyrolysis, char combustion. Particle entrainment, recovery boiler equipment - furnace, liquor spray, combustion air system, smelt. Convective Heat Transfer, boiler capacity, mass and energy balances

Chemical Recovery – Slaking and Causticizing, Causticizing rates. Separation processes – sedimentation, filtration, separation variables, clarifier design and operation, material balances, lime reburning, calcining lime mud, rotary lime kiln, mass and energy balances, fluidized bed calciners

**Unit V** Stock preparation, Additives, conversion of pulp to paper

## **Name of Text Books:**

1. Pulp and Paper , 3<sup>rd</sup> edition Vol I, II, III and IV Wiley International New York.
2. Hand book of Pulp and Paper Technology, Vannostrand New York.

## **Name of Reference books:**

1. G. N. Pandey , Chemical Tech. Vol II.
2. Dryden , Outlines of Chemical Tech.

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

Semester: VIII  
Subject: Modeling and Simulation  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering  
Code : 319871(19)  
Total Tutorial Periods: 00

- Unit I** Introduction and fundamentals of process modeling and simulation: Need for modeling, Types of process models, Lumped and distributed parameter systems, Fundamental laws, Total continuity and component continuity equations, Energy equation, Equations of motion, Transport equations, Equations of state, Equilibrium, Chemical kinetics.
- Unit II** Mathematical models of chemical engineering systems: Series of isothermal, constant holdup CSTRs, CSTRs with variable holdups, Two heated tanks, Gas-phase pressurized CSTR, Nonisothermal CSTR, Single component vaporizer, Multicomponent flash drum, Batch reactor, Ideal Binary distillation column, pH systems, absorption column
- Unit III** Numerical Techniques for Computer simulation: Linear algebraic equations, nonlinear algebraic equations, Ordinary differential equations, Partial differential equations
- Unit IV** Simulation examples: Gravity flow tank, Three CSTRs in series, Heat transfer equipments, Stirred tank heaters,
- Unit V** Chemical process simulation flow sheeting, Commercial steady state and dynamic simulators, Empirical black-box models, Introduction to application of advanced modeling methods like Artificial Neural Networks (ANN)

## **Name of Text Books:**

1. W.L.Luyben, Process Modeling, Simulation and Control for Chemical Engineers, McGraw-Hill Publishing Co.
2. B.A.Ogunnaike and W.H.Ray, Process Dynamics Modeling and Control, Oxford University Press.

## **Name of Reference Books:**

1. G. Stephanopoulos, "Chemical Process Control: An Introduction to Theory and Practice", Prentice-Hall INC.
2. S.K.Gupta, "Numerical Methods for Engineers", New Age International Publishers Ltd., Wiley Eastern Ltd.
3. Gaikwad R.W., Process Modeling & Simulation, Central Techno Publication.

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

Semester: VIII  
Subject: Process Dynamics and Control  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering  
Code: 319813(19)  
Total Tutorial Periods: 12

- Unit I** Laplace Transform, Linear Open Loop System, I & II order systems & their transient response, Interacting & Non-interacting systems, Linearization, Transportation lag.
- Unit II** Linear closed loop system, -control system, block diagram, closed loop transfer function, controllers, Transient response of closed loop systems.
- Unit III** Pneumatic controller mechanism, baffle nozzle, Proportional controller mechanism, proportional integral control, proportional derivative control, PID control, Final control element, control valves.
- Unit IV** Stability Concept, Routh Stability criterion, Relative Stability, Nyquist Stability criterion, Hurwitz Stability criterion.
- Unit V** Root locus technique, Introduction to Frequency Response, Bode diagram, Bode stability criterion Gain & Phase Margin, Ziegler Nichols Controller Settings.

## Name of Text Books:

1. Coughanowr & Koppel, Process Systems Analysis and Control
2. George Stephanopoulos, Chemical Process Control

## Name of Reference Books:

1. R. P.Vyas, Process Control & Instrumentation, Central Techno Publication
2. B.S.Manke, Linear Control Systems
3. Gaikwad R.W., Process Dynamics & Control, Central Techno Publication

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

Semester: VIII

Subject : Fluidization Engineering

Total Theory Periods: 40

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering

Code : 319812(19)

Total Tutorial Periods: 12

- Unit I** Introduction, Mechanism of Fluidization , Liquid-Solid Fluidization , Gas – Solid Fluidization ,Types of Fluidization operation.
- Unit II** Fluidized Bed - Liquid like behavior of a fluidized bed, Comparison with other contacting methods. , Pressure drop.
- Unit III** Hydrodynamic stability of fluid particle systems, Equation of motion, The Stability of an unbounded uniform suspension, the stability of Bubbles, Magnetic and Electro stabilization.
- Unit IV** Fluidization of Dissimilar materials, Incipient Fluidization and de fluidization Segregation patterns and Mixing Index, Mechanism of Mixing and segregation.
- Unit V** Application of Fluidization to Heat transfer & Mass transfer (Drying, Particle growth, Coal Combustion )

### Name of Text Books:

1. J. F. Davidson, Fluidization 2nd Edition.
2. Daizo Kunii, Octave Levenspiel , Fluidization Engineering, John wiley & sons.

### Name of Reference Books:

1. J.H.Perry, Chemical Engineers Hand Book, 3rd Edition
2. McCabe & Smith, Unit operation of chemical engineering.
3. Max Leva, Fluidization

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

Semester: VIII

Subject: Sugar Technology

Total Theory Periods: 50

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering

Code: 319873(19)

Total Tutorial Periods: Nil

**Unit I** Sugar - Historical Review, Uses and Economics. Manufacture of Sugar – Cane, cane sugar refining, Decolorization by sulphitation process and Carbonation process, char filtration, Bagasse, Beet Sugar, Energy Requirements.

**Unit II** Sugar Analysis – Physical Methods, Chemical Methods, Micro methods, Chromatographic methods, Purity, Ash, Color. Miscellaneous Sugars, Corn Sweeteners.

**Unit III** Cane Sugar – Cultivation, Raw Sugar Manufacture, Clarification, Evaporation, Crystallization, Vacuum Pans, Centrifuging, Boiling Systems, Raw Sugar, Direct – consumption Sugar, Refining, Crystallization, Packaging, storing and shipping, Products.

**Unit IV** Beet Sugar – Sugar beet composition, Manufacture – Diffusion process, Purification with lime and carbon dioxide, Evaporation and Fuel Economy, Crystallization, Steffan process for desugaring molasses, Material Balance and Quality Control.

**Unit V** Sugar Derivatives – Sucrose, Degradative reactions, Synthetic Derivatives, Enzyme Conversion, Starch, Dextrose, Glucose, Fructose, Maltose, Lactose.

## **Name of Text Books:**

- Honig P., Principles of Sugar Technology, 3 Vols., Elsevier, New York, 1962.
- Panacost H.M., and W.R.Junk, Handbook of Sugars, 2<sup>nd</sup> Ed., Avi, Westport, Conn., 1980.
- Vukov K., Physics and Chemistry of Sugar Beet in Sugar Manufacture.

## **Name of Reference Books:**

- Austin, George T., Shreve's Chemical Process Industries, 5<sup>th</sup> Ed., McGraw Hill Book Company.
- Bhatia S.C., Chemical Process Industries, Vol. II, CBS Publishers and Distributors.
- Pandey G.N., A Textbook of Chemical Technology, Vol. II, Vikas Publishing House Pvt. Ltd.

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

Semester: B E Eighth  
Subject: Process Equipment Design-III  
Total Theory Periods: 50  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 02

Branch: Chemical Engineering  
Code: 319811(19)  
Total Tut Periods: 12  
Duration: 4 Hours

**Unit I** Design of distillation columns - Sieve plate, bubble cap & packed bed.

**Unit II** Design of absorption columns - plate & packed columns.

**Unit III** Design of Extraction equipments - plate & packed columns.

**Note:** The paper will be of four hours duration. The Candidate will be allowed to use the following in the examination hall.

1. Chemical Engineering Handbook – J.H. Perry.
2. Data file as supplied by the examination center.

Candidates may bring their own copy of the Handbook. It will not be supplied by the examination center.

## **Name of Text Books:**

1. Ludwig E - Petrochemical Plant Design, Volume II.
2. Perry J.H.- Chemical Engineering Handbook

## **Name of Reference Books**

1. Ullman - Chemical Engineering and Plant Design
2. Speight - Chemical Process and Design Hand book
3. Treybal R.E., Mass Transfer Operations.

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

Semester: B E Eighth

Subject: Process Engineering & Costing

Total Theory Periods: 50

Total Marks in End Semester Exam: 80

Minimum number of class tests to be conducted: 2

Branch: Chemical Engineering

Code: 319872(19)

Total Tut Periods: 00

- Unit I** Value Of Money - Equivalence: Value of money. Equations for economic studies and equivalence. Amortization Capital recovery, Depreciation.
- Unit II** Capital Requirements For Process Plants: Project implementation steps. Feasibility studies. Capital requirements for process plants. Cost indices. Equipment cost. Service facilities. Capital requirements for complete plants. Balance sheet
- Unit III** Cost, Earnings, Profits And Returns: Variable cost. Fixed cost. Income statement. Economic production charts. Capacity factors. Taxes and insurance
- Unit IV** Economics Of Selecting Alternates: Annual cost method. Present worth method. Equivalent alternates. Rate of return and payment time. Cash flow analysis.
- Unit V.** Overall Cost Analysis And Economic Trade Offs: Economic balance: Economic balance in batch operations. Utility cost. Overhead cost. Plant layout & overall cost analysis for the plant. Economic trade offs.

## **Name of Text Books:**

1. Peters M. S. and Timmerhaus K. D.- Plant Design and Economics for Chemical Engineers, McGraw Hill book Co., New York, 1991
2. Schwyer H. E.- Process Engineering Economics, McGraw Hill Book Co., New York, 1955.

## **Name of Reference Books:**

1. Jelen F.C., Cost and Optimization Engineering, McGraw Hill Book Co., New York, 1970.
2. Smith Robin- Chemical Process Design, McGraw Hill Book Co., New York, 1995.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester : VIII  
Subject: Report Writing & Seminar  
Total No. of periods : 2 per week  
Total marks in End Semester Exam: Nil  
Minimum Number of class test to be conducted: Two

Branch: Chemical Engg.  
Code: 300825(19)  
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

Branch: Chemical Engineering.

Subject: Process equipment Design – III Viva

Practical Code: 319821 (19)

Total Practical Periods: 40

Total Marks in End Semester Exam: 40

**Viva-voce examination based on syllabus for process Equipment Design – III Theory, to be conducted.**

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

Semester: VIII  
Subject: Fluidization Engineering Lab  
Total Practical Periods: 40  
Total Marks in End Semester Exam: 40

Branch: Chemical Engineering.  
Practical Code: 319822 (19)

**Experiments to be performed:** (Minimum 10)

- (i) Determination of the Pressure drop in Fluidized Bed for Solid- Liquid Fluidization.
- (ii) Determination of the Pressure drop in Fluidized Bed For Sand- air Fluidization.
- (iii) Determination of the velocity in Fluidized Bed for Solid- Liquid Fluidization.
- (iv) Determination of the Pressure drop in Fluidized Bed for Solid- Gas Fluidization
- (v) Mixing of Solid material in Fluidized Bed.
- (vi) Drying of Materials in Fluidized Bed.
- (vii) Determination of variation in Pressure Drop with Bed Height.
- (viii) Determination of variation in Threshold fluidization velocity varying thickness of Solid Bed.
- (ix) Determination of the Pressure drop in Fluidized Bed For Salt air Fluidization.
- (x) Variation in rate of drying with particle size in fluidized bed.
- (xi) Variation in rate of drying with variation in flow rates of hot air.

**List of Equipments/Machines Required**

- (i) Fluidized Bed.
- (ii) Blower
- (iii) Pump

**Recommended Books:**

1. J.H. Perry, Chemical Engineers Hand Book, 3<sup>rd</sup> Edition
2. McCabe & Smith, Unit operation of chemical engineering.

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

Semester: VIII  
Subject: Process Dynamics and Control Lab  
Total Practical Periods: 40  
Total Marks in End Semester Exam: 40

Branch: Chemical Engineering  
Practical Code: 319823 (19)

## **Experiments to be performed:** (Minimum 10)

- Study of response characteristics of the pressure control for first order system.
- Study of response characteristics of the flow control for first order system.
- Study of response characteristics of the level control for first order system.
- To determine the time constant of mercury in glass thermometer in hot water-air system for first order system.
- To determine the time constant of mercury thermometer in mobile oil - air system for first order system.
- To determine the time constant of mercury thermometer in ice cold water - air system for first order system.
- Study of response characteristics of Computerized Closed Loop Flow Control System.
- Study of response characteristics of Computerized Closed Loop Level Control System.
- Study of Study of response characteristics of Computerized Closed Loop Pressure Control System.
- Study of response characteristics of Computerized Closed Loop Temperature Control System.
- Study of response characteristics of Computerized Closed Loop Interacting Tank
- Study of response characteristics of Computerized Closed Loop Non Interacting Tank.
- To determine the time constant of thermocouple in hot water-air system for first order system.
- To determine the time constant of thermocouple in mobile oil - air system for first order system.
- 15. To determine the time constant of thermocouple in ice cold water - air system for first order system.

## **List of Equipments/Machines Required**

- Computerized Closed Loop Flow Control System.
- Computerized Closed Loop Level Control System.
- Computerized Closed Loop Pressure Control System.
- Computerized Closed Loop Temperature Control System.
- Computerized Closed Loop Interacting Tank
- Computerized Closed Loop Non Interacting Tank.
- Water bath
- Thermometer & Thermocouple

## **Recommended Books:**

- Coughanowr , Process System Analysis and Control
- Stephanopoulos , Chemical Engineering Process Control
- Vyas R.P., Instrumentation and Process Control

# 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, Crativity, 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

Subject: **Safety Engineering**

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: 300889 (37)

Total Tutorial Period : 12

## **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 continued 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. Shinskey – 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 e-commerce 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  
Engineering  
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** Subject: Value  
Code: 300894 (37)  
Total Tutorial Period: 12

## **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 Mangement: 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, Massachussetts 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, Bilai***

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 alteration 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**

**Branch: Common to All Branches**

**Code : 300898 (19)**

**Total Tutorial Periods: 00**

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

## **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.