# Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination

**B.E. VIII SEMESTER**

**ELECTRONICS AND INSTRUMENTATION**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Board of studies</th>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Period Per Week</th>
<th>Scheme of Exam</th>
<th>Total Marks</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td><strong>L</strong></td>
<td><strong>T</strong></td>
<td><strong>P</strong></td>
<td><strong>ESE</strong></td>
<td><strong>CT</strong></td>
</tr>
<tr>
<td>1</td>
<td>Electronics &amp; Instrumentation</td>
<td>327811 (27)</td>
<td>Instrumentation System Design</td>
<td>3</td>
<td>1</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Electronics &amp; Instrumentation</td>
<td>327812 (27)</td>
<td>Optical Instrumentation</td>
<td>3</td>
<td>1</td>
<td>80</td>
<td>20</td>
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<tr>
<td>3</td>
<td>Electronics &amp; Instrumentation</td>
<td>327813 (27)</td>
<td>Embedded Instrumentation System</td>
<td>3</td>
<td>1</td>
<td>80</td>
<td>20</td>
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<tr>
<td>4</td>
<td>Refer Table –III</td>
<td></td>
<td>Elective - III</td>
<td>3</td>
<td>1</td>
<td>80</td>
<td>20</td>
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<td>5</td>
<td>Refer Table – IV</td>
<td></td>
<td>Elective - IV</td>
<td>3</td>
<td>1</td>
<td>80</td>
<td>20</td>
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<tr>
<td>6</td>
<td>Electronics &amp; Instrumentation</td>
<td>327821 (27)</td>
<td>Instrumentation System Design Laboratory</td>
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<tr>
<td>7</td>
<td>Electronics &amp; Instrumentation</td>
<td>327822 (27)</td>
<td>Optical Instrumentation Laboratory</td>
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<td>8</td>
<td>Electronics &amp; Instrumentation</td>
<td>327823 (27)</td>
<td>PC Based Instrumentation Laboratory</td>
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<td>9</td>
<td>Electronics &amp; Instrumentation</td>
<td>327824 (27)</td>
<td>Major Project</td>
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<tr>
<td>10</td>
<td>Electronics &amp; Instrumentation</td>
<td>300825 (27)</td>
<td>Report Writing &amp; Seminar</td>
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<tr>
<td>11</td>
<td>Library</td>
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<td></td>
<td><strong>Total</strong></td>
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<td><strong>15</strong></td>
<td><strong>5</strong></td>
<td><strong>20</strong></td>
<td><strong>620</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

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

### Table – III

**Professional Elective – III**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Electronics &amp; Instrumentation</td>
<td>327871 (27)</td>
<td>Robotics and Automation</td>
</tr>
<tr>
<td>2</td>
<td>Electronics &amp; Instrumentation</td>
<td>327872 (27)</td>
<td>Logic &amp; Distributed Control Systems</td>
</tr>
<tr>
<td>3</td>
<td>Electronics &amp; Instrumentation</td>
<td>327873 (27)</td>
<td>Power Plant Instrumentation</td>
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<tr>
<td>4</td>
<td>Electronics &amp; Instrumentation</td>
<td>327874 (27)</td>
<td>Instrumentation for Pollution Control</td>
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<tr>
<td>5</td>
<td>Electronics &amp; Instrumentation</td>
<td>327875 (27)</td>
<td>Hardware Descriptive Language</td>
</tr>
<tr>
<td>6</td>
<td>Electronics &amp; Instrumentation</td>
<td>327876 (27)</td>
<td>Operating Systems</td>
</tr>
</tbody>
</table>

Note (1) - 1/4th 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.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management</td>
<td>300881 (36)</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>2</td>
<td>Information Technology</td>
<td>300882 (33)</td>
<td>E-Commerce &amp; Strategic IT</td>
</tr>
<tr>
<td>3</td>
<td>Management</td>
<td>300883 (36)</td>
<td>Technology Management</td>
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<tr>
<td>4</td>
<td>Information Technology</td>
<td>300884 (33)</td>
<td>Decision Support &amp; Executive Information System</td>
</tr>
<tr>
<td>5</td>
<td>Comp. Sc. &amp; Engg.</td>
<td>300885 (22)</td>
<td>Software Technology</td>
</tr>
<tr>
<td>6</td>
<td>Management</td>
<td>300886 (36)</td>
<td>Knowledge Entrepreneurship</td>
</tr>
<tr>
<td>7</td>
<td>Management</td>
<td>300887 (36)</td>
<td>Finance Management</td>
</tr>
<tr>
<td>8</td>
<td>Management</td>
<td>300888 (36)</td>
<td>Project Planning, Management &amp; Evaluation</td>
</tr>
<tr>
<td>9</td>
<td>Mechanical Engineering</td>
<td>300889 (37)</td>
<td>Safety Engineering</td>
</tr>
<tr>
<td>10</td>
<td>Comp. Sc. &amp; Engg.</td>
<td>300890 (22)</td>
<td>Bio Informatics</td>
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<tr>
<td>11</td>
<td>Mechanical Engineering</td>
<td>300891 (37)</td>
<td>Energy Conservation &amp; Management</td>
</tr>
<tr>
<td>12</td>
<td>Nanotechnology</td>
<td>300892 (47)</td>
<td>Nanotechnology</td>
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<tr>
<td>13</td>
<td>Management</td>
<td>300893 (36)</td>
<td>Intellectual Property Rights</td>
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<tr>
<td>14</td>
<td>Mechanical Engineering</td>
<td>300894 (37)</td>
<td>Value Engineering</td>
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<tr>
<td>15</td>
<td>Civil Engineering</td>
<td>300895 (20)</td>
<td>Disaster Management</td>
</tr>
<tr>
<td>16</td>
<td>Civil Engineering</td>
<td>300896 (20)</td>
<td>Construction Management</td>
</tr>
<tr>
<td>17</td>
<td>Civil Engineering</td>
<td>300897 (20)</td>
<td>Ecology &amp; Sustainable Development</td>
</tr>
<tr>
<td>18</td>
<td>Chemical Engineering</td>
<td>300898 (19)</td>
<td>Non Conventional Energy Sources</td>
</tr>
<tr>
<td>19</td>
<td>Electrical Engineering</td>
<td>300899 (24)</td>
<td>Energy Auditing and Management</td>
</tr>
</tbody>
</table>
UNIT – I: Design of Electrical Components and Transducers
Variable capacitance transducers, associated circuits, variable resistance transducers, wire potentiometers, strain
gauge, metal resistors and thermistors, variable inductance transducers, ferromagnetic cores with air gaps,
ferromagnetic plunger type core, associated circuits, Design of LVDT with output circuitry, permanent magnet
moving coil instruments, capacitive transducers, clamped diaphragm and membrane, bridge circuit, Piezo electric
transducers, charge amplifiers.

UNIT – II: Interface of primary elements with and devices
Temperature sensing from a distance, current mode transmission of signals, ambient referenced thermocouples.

UNIT – III: Design of Controllers
Controller configurations (P, PI, PD, PID, Cascade, etc) Setting, tuning, realization of controllers, electrical, pneumatic
displacement, balanced and forced balance, controllers for interacting processes.

UNIT – IV: Reading and Drawing of Circuit Diagrams of Instrumentation Systems
Standards, Specifications, one line diagram of hydraulic, pneumatic and electrical instrumentation systems.

UNIT – V: System Design (Case Study)
Microprocessor- Based system design for temperature & Pressure.
PC-Based system design for. Thermal Power station & Cement plant.

Text Books:
1. Neubort,H.K.P.-Instrumentation Transducers-An Introduction to Their Performance and design, Clarendon
   Press, Oxford.

Reference Books:
$\textbf{Chhattisgarh Swami Vivekanand Technical University, Bhilai}$

\textbf{Semester : VIII} \hspace{1cm} \textbf{Branch: E&I/AE&I}

\textbf{Subject: Optical Instrumentation} \hspace{1cm} \textbf{Code: 327812 (27)}

\textbf{Total Theory Periods: 40} \hspace{1cm} \textbf{Total Tutorial Periods: 12}

\textbf{Total Marks in End Semester Examination: 80}

\textbf{Minimum number of Class tests to be conducted: Two}

\textbf{UNIT – I : Optical Fibers and Their Properties}

\textbf{UNIT – II : Industrial Application of Optical Fibers}

\textbf{UNIT – III : Laser Fundamentals}

\textbf{UNIT – IV : Industrial Application of Lasers}
Laser for measurement of distance, length velocity, acceleration, current, voltage and atmospheric effect – material processing – laser heating, welding melting and trimming of materials – removal and vaporization.

\textbf{UNIT – V : Hologram and Medical Application}
Holography – basic principle; methods; holographic interferometry and applications, holography for non-destructive testing – holographic components – medical applications of lasers; laser and tissue interaction – laser instruments for surgery, removal of tumors of vocal cords, brain surgery, plastic surgery, gynecology and oncology

\textbf{Text Books:}

\textbf{Reference Books:}
5. Ghatak A.K and Thiagarajar K, Optical Electronics, TMH.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : VIII  Branch: E&I
Subject: Embedded Instrumentation System  Code: 327813 (27)
Total Theory Periods: 40  Total Tutorial Periods: 12
Total Marks in End Semester Examination: 80
Minimum number of Class tests to be conducted: 2

UNIT – I : Introduction
Embedded system evolution trends – basic real time concepts – real time design issues – 68HC11 Microcontrollers –
architecture – instruction set – interrupt handling – integrating interrupts in a system – examples – the shared data
problem – software architecture.

UNIT – II : Real Time Operating Systems (RTOS)
Real time specifications – real time kernels – inter-task communications and synchronizations – real time memory
management.

UNIT – III : System Performance, Analysis and Optimization
Response – time calculation – interrupt latency – time loading and its measurement – scheduling – reducing
response times and time loading – analysis of memory requirements – reducing memory loading – input – output
performance.

UNIT – IV : Debugging Techniques and Development Tools
Faults, failures, bugs and effects – reliability – testing – fault tolerance – host and target machines – linker / locators
for embedded software – getting embedded software into target system.

UNIT – V : Real Time Applications
Real time system as complex systems – real time databases – real time image processing – real time Unix –
building real time applications with real time programming languages. An example : The tank monitoring system

Text Books:
   Hall of India, New Delhi, 2000

Reference Books:
   Networking with C/C++”, Prentice Hall of Inc., New Jersey, 1999
   2000
UNIT – I : BASIC CONCEPTS IN ROBOTICS
Advantages, Applications, Basic structure of robots, Numerical control of machine tools, Resolution, Accessories and Repeatability, Classification and Structure: Point to point Robotic system, control tool of Robotic systems, Manipulator, The wrist motors and the grips, structure of continuous path rot Robot systems.

UNIT – II : DRIVES AND CONTROL SYSTEMS
Hydraulic system Direct current serve motors, Control approaches of Robots, Control and loops using current amplifier, Control loop using voltage amplifier, Elimination of Stationary position errors, Control loop in CNC system. Kinematics Analysis and Coordinate Transformation: Direct Kinetic problems in Robotics, Geometry based Direct Kinematics Analysis, Co-ordinate and vector Transformations using matrices, Denourt – Hartenberg convention, Applications of the DH method, Quaternion and rotation vector representations.

UNIT – III : TRAJECTORY INTERPOLATORS
Necessity of Interpolators, Generation of motion commands Trajectory planning, Basic structure of Interpolators, Particular Solutions for the Inverse Kinetics problem Resolved motion state control method, solving the Inverse Kinetic problem using rotation vector.

UNIT – IV : SENSORS AND INTELLIGENT ROBOTS

UNIT – V : APPLICATION OF ROBOTS
Handing, Loading and Unloading, the manufacturing cell, Wielding, Spray painting, Assembly, Machining, Press work & Forging, Heat treatment applications, Robots in Electroplating.

Text Books :

Reference Books :-
2. Anthony CMC Donad. Robot Technology : (Theory Design and Application) (Prentice Hall)
UNIT – I : Review of Computers in Process Control

UNIT-II : Programmable Logic Controller(PLC) Basics
Definition- overview of PLC systems - Input/ Output modules - Power supplies –ISO slots. General PLC programming procedures - programming on-off outputs. Auxiliary commands and functions - creating ladder diagrams from process control descriptions. PLC basic functions - register basics - timer functions - counter functions.

UNIT – III : PLC Intermediate Functions
Arithmetic functions - number comparison functions - skip and MCR functions - data move systems. PLC Advanced intermediate functions- utilizing digital bits - sequencer functions - PLC Advanced functions: alternate-programming languages - operation. PLC-PID functions - PLC installation - trouble shooting and maintenance - controlling a robot - processes with PLC - design of inter locks and alarms using PLC.

UNIT – IV : Introduction to (DCS)
Evolution of DCS - building blocks - detailed descriptions and functions of field control units - operator stations - data highways - redundancy concepts.

UNIT – V : Implementation of DCS
DCS - supervisory computer tasks and configuration - DCS- system integration with PLC and computers. Communication in DCS. Case studies in DCS.

Text Books:

Reference Books:
1. Lukcas , M.P,: “ Distributed control systems”, Van Nostrand Reinhold Co.
3. Hughes, T, “ Programmable logic controllers”, ISA Press.
UNIT – I : Overview Of Power Generation

UNIT – II : Measurements In Power Plants
Electrical measurements – current, voltage, power, frequency, power – factor etc. – non electrical parameters – flow of feed water, fuel, air and steam with correction factor for temperature – steam pressure and steam temperature – drum level measurement – radiation detector – smoke density measurement – dust monitor.

UNIT – III : Analyzers In Power Plants

UNIT – IV : Control Loops In Boiler

UNIT – V : Turbine – Monitoring And Control
Speed, vibration, shell temperature monitoring and control – steam pressure control – lubricant oil temperature control – cooling system

TEXT BOOKS

REFERENCES
UNIT – I : Environmental Monitoring

UNIT – II : Air Pollution Monitoring

UNIT – III : Water Pollution Monitoring

UNIT – IV : Noise pollution monitoring
Noise pollution and its measurement

UNIT – V : Industrial pollutants and its monitoring
Monitoring Instruments of industrial pollution.

Text Books

Reference Book
UNIT – I : Introduction to VHDL

UNIT – II : Behavioral Modeling
Introduction to Behavioral Modeling, Transport Versus Inertial Delay, Inertial Delay, Transport Delay, Inertial Delay Model, Transport Delay Model, Simulation Deltas, Drivers, Driver Creation, Bad Multiple Driver Model, Generics, Block Statements, Guarded Blocks,

UNIT – III : Sequential Processing

UNIT – IV : Date Types
Object Type, Signal, Variables, Constants, Data Types, Scalar Types, Composite Types, Incomplete Types, File Type Caveats, Subtypes,

UNIT – V : VHDL Synthesis
Register Transfer Level Description, Synthesis, IF Control Flow Statements, RTL Simulation, VHDL synthesis

Text Books:
2. VHDL Programming by Perry, TMH Pub.

Reference Books:
UNIT – I : Introduction
Concept of an operating system, Early systems, simple monitor, Performance, Multiprogramming, Time sharing, Real time system, protection, Different losses of computers, Multiprocessor system, Operating system services, Type of services, The user view, The operating system view.

UNIT – II : File Systems
File concept , file support , Access methods, Allocation methods, directory system, file protection, Implementation issues , CPU Scheduling, Review of multiprogramming concepts, scheduling concepts, scheduling Algorithms, Algorithm Evaluation, Multiple processor scheduling, memory management, Preliminaries, Bare machine Resident Monitor, swapping, multiple partition paging other consideration.

UNIT – III : Virtual Memory
Overlays, Demand paging, Performance of demand paging, page replacement, virtual memory concept, page replacement algorithms, Allocations algorithms, Thrashing, Other consideration, DISK scheduling, Physical characteristics, FCFS scheduling, SSTF, SCAN, Selecting a disk scheduling algorithm, sector queuing, Deadlocks, The deadlock problem, deadlock characterization, Deadlock prevention, Deadlock Avoidance, Deadlock Detection, Recovery from dead lock combined approach to deadlock handling.

UNIT – IV : Concurrent Processes
Precedence graphs specification review of process concept , Hierarchy of process , The critical section problem semaphores, Inter process communication CONCURRENT PROGRAMMING Motivation, Modularization, synchronization, Concurrent languages PROTECTION, Goals of protection, mechanism and policies, domain of protection, Access matrix and its implementation, Dynamic protection structure, Revocation, Exiting systems, languages based protection, security.

UNIT – V : Design Principle
Goals, Mechanisms and policies, Layered approach, virtual machines, multiprocessor, Implementation, system generation disturbed systems, Motivation, Topology, Communication systems, type, file system modes of computations, Event ordering synchronization, Deadlock handling Robustness, Reaching agreement, Elector Algorithms, The unix operating system, History, design principles, Programmer interface, V ser interface, file systems process management, memory management, I/O system interprocess communication.

Text Books:
1. Paterson J.L. and silberschutz A., “Operating system concepts”

Reference Books:
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII  
Branch: E&I  
Subject: Instrumentation System Design Laboratory  
Code:  327821 (27)  
Total Practical Periods: 50  
Total Marks in End Semester Examination: 40

Experiments to be performed:
1. On-Off Controller with and without neutral zone
2. Controller tuning using continuous cycling methods
3. Controller tuning using Process Reaction Curve
4. Study of P, I, D, PI, PD and PID Controller for : Temperature, Pressure, Flow and Level control system
5. RTD based temperature transmitter
6. Differential Pressure Transmitter Characteristics
7. Thermocouple based Temperature Transmitter
8. Calibrations and tuning of a PID controllers.
9. Test and find the characteristics of a given control valve.
10. Study of hydraulic components and simple circuits.
11. Study of pneumatic components and simple circuits.
12. Study of two-wired transmitter and square root extractor.
14. Study of PLC and simple programming.
15. Study of specific related equipment e.g. RTD (Resistant temperature Detector), transducer, pH simulator, pressure regulators and safety devices.

List of Instruments:
All sorts of transducers with kits, Discrete components like OPAMP, Resistor & Capacitors, Voltage source, Function generator, CRO.

Reference Book:
Handbook of Instrumentation, Liptak
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Experiments to be performed:
1. To measure bending loss of a fiber.
2. To propagation or attenuation loss in a fiber.
3. To obtain amplitude modulation and to transmit the same over fiber optic cable and to demodulate the same at the receiver end.
4. To determine the numerical aperture of a fiber.
5. To measure various types of losses occur in an optical fiber.
6. To study the AC characteristics of intensity modulation of laser and fiber optic system.
7. To measure optical power of a laser diode Vs. forward current.
8. To monitor photo diode current Vs. laser optical output.
9. Demonstration of voice transmission through optical fiber using FM.
10. Communication between two computers using RS232 interface via optical fiber.
11. To measure plastic fiber patch cord loss for various lengths of fiber.
12. To study voice transmission through fiber optic cable using PWM.
13. To transmit and receive text files over fiber optic cable.
14. To transmit, receive and observe digital signals over fiber optic cable.
15. To measure rise time, fall time, pulse width distortion of a laser and to determine transmission delay.

List of Equipments/Machine Required:
Fiber optic trainer kit, optical fiber, Splicing unit, Data Acquisition card for optical signal, O/E & E/O Converter, CRO.

Recommended Books:
Fundamentals of Optical Fiber Communication – Sathish Kumar, PHI
List of Experiments to be performed:

- Computer Simulation of All sorts of Thermocouple to study their characteristics
- Computer Simulation of PID controller action
- Computer Simulation of PLC programming
- Computer simulation of flow control loop
- Processing of simulated ECG signal
- Processing of simulated EEG signal
- Processing of simulated Heart sound
- Interconnection of two microcomputers through serial interface through serial ports.
- Data Acquisition System.
- Interfacing of an analog signal to microcomputer through ADC.
- Interfacing of a Digital signal to Microcomputer through DAC.
- PC Based Data acquisition using ADC/DAC Add-on cards
- Computer Interface for PID Controllers
- Computer Controlled Lathe Machine

List of equipments:
NI Labview software, Electronic Workbench

Reference book:
Labview manual, National Instruments.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: BE 8th Branch: Electronics & Instrumentation
Subject: Report Writing & Seminar Code: 300825 (27)
Total No. of periods: 2 per week Total Tutorial Periods: Nil
Total marks in End Semester Exam: Nil Teacher's Assessment: 40 marks
Minimum Number of class test to be conducted: Two

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

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:

Reference Books:
1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman
UNIT -1
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:
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

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        Branch: Common to All Branches
Subject Name: Technology Management        Subject Code: 300883 (36)
Total Theory periods: 40        Total Tutorial periods: 10
Total Marks in End Semester Exam: 80
Minimum number of class tests to be conducted: 02

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
[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:

Reference Books:
3. Plsek, Crativity, Innovation and Quality, PHI
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
Mail Component: Integration of Mail Management Examples of Use implications for DSS.

UNIT-III Intelligence and Decision Support Systems:

UNIT-IV Designing A DSS:Planning for DSS, Designing a Specific DSS, Interviewing Techniques, OtherTechniques, Situational AnalysisDesign 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 .


Name Of Text Books-:
Decision Support System By Vicki l Sauter
Management Information system-Gerald V. Post & David L. Anderson
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI
(C.G.)

Semester: VIII       Branch: Common to All Branches.
Subject: Software Technology       Code: 300885 (22)
Total Theory Periods: 4 per week.       Total Tut Periods: Nil.
Total Marks in End Semester Exam: 80.
Minimum number of class tests to be conducted: 02.

UNIT-1
ASSEMBLY LANGUAGE PROGRAMMING
Pentium Assembly languages-Registers, Memory Model, Addressing mode, 1source Link, Installation,
Assembler Directives.
ASSEMBLER DESIGN

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
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:
Enterpreneur 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.
Catherine L Mann, Knowledge entrepreneurship, Oxford
Heinke Robkern ,Knowledge entrepreneurship,.
Bonnie Montano, Knowledge Management, , IRM Press, London
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.
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.
UNIT – I
Safety Philosophy and principles of Accident prevention
Introduction, accident, injury, unsafe act, unsafe condition, reportable accidents, need for safety, breakdown 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. Faweett and Wood
Personal Protective Equipment – NSC Bombay

REFERENCE BOOKS
Ergonomics - P. Krishna Murthy
Fire Prevention Hand Book – Derek James
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 Marcov 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

TEXT BOOKS

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
4. Current Topics in Computational Molecular Biology (Computational Molecular Biology), Tao Jiang, Ying Xu, Michael Zhang (Editors), 2002, MIT Press
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

UNIT – III
Energy in Manufacturing

UNIT – IV
Heat Recovery System

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**
2. Energy Management – Paul O’Callaghan –

**REFERENCE BOOKS**
2. Energy Management in Illuminating System – Kao Chen – CRC Publishers
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


References:
1. Guozhong Cao, “Nanostructures and Nanomaterials”, Imperial College Press, London
Unit-I

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:
2. Kumar K ,Cyber law, intellectual property and e-commerce security, Dominent 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
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
Industrial Engineering & Management – O.P. Khanna – Dhanpat Rai & Sons

REFERENCES
Compendium on Value Engineering – H.G. Tufty – Indo American Society
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 (2nd edition) – Anil K Chopra (Pearson Education Publication)

Name of Reference Books:
Fundamentals of Vibrations – Anderson, R.A. (Mc Millan)
Earthquake engineering damage assessment and structural design – S.F. Borg
Disasters and development – Cuny F (Oxford University Press Publication)
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

Unit 4
Labour, Material and Equipment Utilization

Unit 5
Cost Estimation

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

Name of Reference Books:
Construction Project Management – Frederick E.Gould ( Wentworth Institute of Technology, Vary E.Joyce, Massachusetts Institute of Technology, 2000)
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 an 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. (-----)
Unit I

Unit II

Unit III

Unit IV

Unit V

Name of Text Books:
1. John A Duffie & William A Beckman: Solar Energy Thermal processes Wiley Inter science publication

Name of Reference Books:
UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:

Text Books:

Reference Books:
1. Jyothi Prakash- Demand Side Management, Tata McGraw-Hill Publishers,