### SCHEME OF INSTRUCTION AND EXAMINATION

**B.E. IIIrd YEAR (REGULAR)**

**INFORMATION TECHNOLOGY**

**SEMESTER-I**

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Syllabus Ref.No.</th>
<th>Subject</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Periods Per Week</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>D/P</td>
</tr>
<tr>
<td>1</td>
<td>CM 321</td>
<td>Managerial Economics &amp; Accountancy</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>BIT 302</td>
<td>Software Engineering</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>BIT 303</td>
<td>Digital Signal Processing</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>BIT 304</td>
<td>Database Management Systems</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>BIT 305</td>
<td>Operating Systems</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>BIT 306</td>
<td>Theory of Automata</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>

#### THEOREY

#### PRACTICALS

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Syllabus Ref.No.</th>
<th>Subject</th>
<th>Periods Per Week</th>
<th>Duration in Hrs</th>
<th>Maximum Marks</th>
<th>Univ. Exam</th>
<th>Sessionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BIT 331</td>
<td>Operating Systems Lab</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>BIT 332</td>
<td>DBMS Lab</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>BIT 333</td>
<td>Mini Project - III</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>25</td>
</tr>
</tbody>
</table>

Total | 24 | 9 | - | 550 | 225 |
CM 321

MANAGERIAL ECONOMICS AND ACCOUNTANCY

Instruction  
4 Periods per week

Duration  
3 Hours

University Examination  
75 Marks

Sessional  
25 Marks

Unit I


Unit II

Consumer Behaviour: Law of Demand, Determinants, Kinds; Elasticity of Demand (Price, Income and Cross-Elasticity); Demand Forecasting, Law of Supply, Concept of Equilibrium. (Theory questions and small numerical problems can be asked).

Unit III

Theory of Production and Markets: Production Function, Law of Variable Proportion, ISO quants, Economics of Scale, Cost of Production (Types and their measurement), Concept of Opportunity Cost, Concept of Revenue, Cost-Output relationship, Break-Even Analysis, Price – Output determination under Perfect Competition and Monopoly (theory and problems can be asked).

Unit IV

Capital Management: Its significance, determination and estimation of fixed and working capital requirements, sources of capital, Introduction to capital budgeting, methods of payback and discounted cash flow methods with problems. (Theory questions are numerical problems on estimating working capital requirements and evaluation of capital budgeting opportunities can be asked).

Unit V


Suggested Reading:
BIT 302

SOFTWARE ENGINEERING

Instruction 4 Periods per week
Duration 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT-I


UNIT-II

Requirements Modeling: Requirements Analysis, Scenario-Based Modeling.
Component level Design: Designing Class-Based Components, Conducting Component-Level Design, Designing Traditional Components, Component-Based Development.

UNIT-III


UNIT-IV

Software Configuration Management: Software Configuration Management.

UNIT-V


Suggested Reading:
BIT 303

DIGITAL SIGNAL PROCESSING

<table>
<thead>
<tr>
<th>Instruction</th>
<th>4 Periods per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>3 Hours</td>
</tr>
<tr>
<td>University Examination</td>
<td>75 Marks</td>
</tr>
<tr>
<td>Sessional</td>
<td>25 Marks</td>
</tr>
</tbody>
</table>

UNIT-I


UNIT-II


UNIT-III

Structures for IIR systems, direct form, cascade form, parallel form. Representation of numbers, Round off effect in digital filters.

UNIT-IV

Architectures for Programmable DSP devices: Introduction, basic architectural features, DSP computational Building Blocks (Multiplier, Shifter, MAC Unit & ALU). Bus Architecture & Memory: On-chip memory, organization of on-chip memory, Data Addressing capabilities: Immediate addressing mode, register addressing mode, direct addressing mode, indirect addressing mode and Special addressing modes. Address generation Unit, Programmability & Program execution: Program Control, Program Sequence. Speed issues: Hardware architecture, parallelism, pipelining. Introduction to TMS320C54xx DSP processor, Bus structure, CPU, Data Addressing modes, Memory space.

UNIT-V


Suggested Reading:
BIT 304

DATABASE MANAGEMENT SYSTEMS

Instruction 4 Periods per week
Duration 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT – I


UNIT – II

Structured Query Language: Data Definition, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Complex Queries, Views, Modification of the Database, Joined Relations.

UNIT – III
Advanced SQL: SQL Data Types and Schemas, Integrity Constraints, Authorization, Embedded SQL, Dynamic SQL, Functions and Procedural Constructs, Recursive Queries, Advanced SQL Features.


UNIT - IV
Indexing and Hashing: Basic Concepts, Ordered Indices, B+- Tree Index Files, B-Tree Index Files, Multiple-Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices, Index Definition in SQL.


UNIT – V
Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols, Validation-Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling, Insert and Delete Operations, Weak Levels of Consistency, Concurrency of Index Structures.


Suggested Reading:
BIT 305 OPERATING SYSTEMS

Instruction 4 Periods per week  Duration 3 Hours
University Examination 75 Marks  Sessional 25 Marks

UNIT I

System Structures: Operating-System Services, User Operating System Interface, System calls, Types of System Calls, System Programs, Operating-System Structure, Virtual Machines, Operating – System Generation, System Boot.


UNIT II
Process Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multi-Processor Scheduling, Thread Scheduling, Operating System Examples, Algorithm Evaluation.

Process Coordination and Synchronization: Background, The Critical-Section Problem, Peterson’s Solution, Synchronization, Monitors, Synchronization Examples, Atomic Transactions.

Deadlocks: System Model, Deadlock characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery From Deadlock.

UNIT III
Memory-Management Strategies: Background, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Example: The Intel Pentium.

Virtual Memory Management: Background, Demand paging, Copy-on-write, Page Replacement, Allocation of Frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory, Other Considerations, Operating-System Examples.


UNIT IV


UNIT V


Suggested Reading:
BIT 306

THEORY OF AUTOMATA

Instruction 4 Periods per week
Duration 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT I
Automata: Introduction to finite Automata, Central concepts of Automata Theory.
Regular Expression And languages: Regular Expressions, Finite Automata and Regular Expression, Applications of Regular Expressions, Algebraic Laws for Regular Expressions.

UNIT II
Properties of Regular Languages: Proving Languages not to be Regular, Closure Properties of Regular Languages, Decision Properties of Regular Languages, Equivalence and Minimization of Automata.

UNIT III
Pushdown Automata: Definition, Language of PDA, Equivalence of PDA’s and; CFG’s. Deterministic pushdown Automata.

UNIT IV
Introduction to Turing Machines: Problems that Computer Cannot Solve, The Turing Machine, Programming Techniques for Turing Machines, Extensions to the Turing Machines, Restricted Turing Machines, Turing Machine and Computers.

UNIT V
Undecidability: A language that is not Recursively Enumerable. An undecidable problem that is RE, undecidable problems about Turing Machines, Post’s Correspondence Problem, Other Undecidable Problems.
Intractable Problems: The classes P and NP, An NP complete Problem, A Restricted Satisfiability problem.

Suggested Reading:


BIT 331

OPERATING SYSTEMS LAB

Instruction       3 Periods per week
Duration          3 Hours
University Examination             50 Marks
Sessional                 25 Marks

1. Familiarity and usage of system calls of LINUX/WINDOWS NT on process management fork(), exec() etc., IPC & Synchronization-pipes, shared memory, messages, semaphores etc., File management-read, write etc.
2. Creating Threads and Manipulating under Windows-NT platform.
3. Implementing a program to get the attributes of a file/Directory on Linux using related system calls.
4. Implementing a program to get and set the environment variables using system calls.
5. Implementation of Echo server using pipes.
8. Implementing Producer Consumer Problem using semaphores.
10. Implementing Reader-writers problem using Semaphores.
11. Implementing Dining philosophers problem using semaphores.

Suggested Reading:

BIT 332

DBMS LAB

Instruction 3 Periods per week
Duration 3 Hours
University Examination 50 Marks
Sessional 25 Marks

1. Creation of database (exercising the commands for creation)
2. Simple condition query creation using SQL Plus
3. Complex condition query creation using SQL Plus
4. Usage of Triggers and Stored Procedures.
5. Creation of Forms for student Information, library information, Pay roll etc.
6. Writing PL/SQL procedures for data validation
7. Generation using SQL reports
8. Creating Password and Security features for applications.
10. Creation of small full pledged database application spreading over to 3 sessions.

Note:- The creation of sample database for the purpose of the experiments is expected to be pre-decided by the instructor.

Suggested Reading:

BIT 333

MINI PROJECT – III

Instruction

Sessional

3 Periods per week
25 Marks

The Students are required to carry out Mini Project in any of the areas such as Database Management Systems, Operating Systems.

Students are required to submit a report on the Mini Project at the end of the Semester.
### SCHEME OF INSTRUCTION AND EXAMINATION

**B.E. IIIrd YEAR (REGULAR)**

**INFORMATION TECHNOLOGY**

#### SEMESTER-II

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Syllabus Ref.No.</th>
<th>Subject</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Periods Per Week</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>L</strong></td>
<td><strong>D/P</strong></td>
</tr>
<tr>
<td>1</td>
<td>BIT 351</td>
<td>Computer Networks</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>BIT 352</td>
<td>Compiler Construction</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>BIT 353</td>
<td>Object Oriented System Development</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>BIT 354</td>
<td>Artificial Intelligence</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>BIT 355</td>
<td>Design &amp; Analysis of Algorithms</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elective-I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>BIT 356</td>
<td>Computer Graphics</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>BIT 357</td>
<td>Data Warehousing &amp; Data Mining</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>BIT 358</td>
<td>Software Testing</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>BIT 359</td>
<td>Digital Instrumentation &amp; Control</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Univ. Exam</strong></td>
</tr>
<tr>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td>24</td>
</tr>
</tbody>
</table>

#### PRACTICALS

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Syllabus Ref.No.</th>
<th>Subject</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BIT 381</td>
<td>OOSD &amp; Compiler Construction Lab</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>BIT 382</td>
<td>Network Programming Lab</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>BIT383</td>
<td>Mini Project - IV</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total**

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Syllabus Ref.No.</th>
<th>Subject</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
With effect from the Academic Year 2012-2013

BIT 351

COMPUTER NETWORKS

Instruction 4 Periods per week
Duration 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT - I


UNIT - II
Internetworking: Concatenated virtual circuits, Connectionless internetworking, Tunneling, Internetwork routing, Fragmentation.


UNIT - III
Network Programming:
Socket Interface: Sockets, Socket Address, Elementary Sockets, Advanced Sockets, Socket Options, Out of Band Data, Daemon process and Internet Super Server, IPv4 and IPv6 interoperability.

Remote Procedure Calls: Introduction, Transparency Issues and Sun RPC.

UNIT - IV
Application Layer:
Domain Name System: DNS Name Space, Resource Records, Name Servers.

Electronic Mail: Architecture and Services, User Agent, Message Formats, Message transfer and Final Delivery.


Multimedia: Digital Audio, Streaming Audio, Voice over IP, Video on Demand.

UNIT - V

Suggested Reading:
BIT 352  

COMPILER CONSTRUCTION

Instruction 4 Periods per week  
Duration of University Examination 3 Hours  
University Examination 75 Marks  
Sessional 25 Marks

UNIT-I

**Introduction:** Programs related to compilers. Translation process, Major data structures, Other issues in compiler structure. Bootstrapping and porting.  

UNIT-II

**Syntax Analysis** – Introduction, Top-Down parsing, Bottom-Up parsing, Introduction to LR Parsing, More powerful LR parsers, Using Ambiguous Grammars, Parser Generators YACC.

UNIT-III

**Syntax Directed Translation** – Syntax Directed Definitions. Evaluation Orders for SDDs. Applications of Syntax Directed Translation.  
**Intermediate code generation:** Variants of Syntax Trees, Three-Address Code, Types and Declarations, Translation of Expressions, Type Checking. Control Flow.

UNIT-IV

**Storage Organization:** Stack Allocation of Space. Access to Non local Data on the Stack, Heap Management, Introduction to Garbage Collection.  

UNIT-V

**Optimizing for Parallelism and Locality** - Basic Concepts, Matrix Multiply: An In-Depth Example, Data Reuse, Synchronization between Parallel Loops.  
**Linkers and Loaders** – Basic Loader functions. Design of an Absolute Loader, A simple bootstrap loader, Machine dependent and independent features.

Suggested Reading:

BIT 353

OBJECT ORIENTED SYSTEM DEVELOPMENT

Instruction  4  Periods per week
Duration of University Examination  3  Hours
University Examination  75 Marks
Sessional  25 Marks

UNIT-I

UNIT-II
Core Workflows: Requirements Capture, Capturing Requirements as Use Cases, Analysis, Design, Implementation, Test.

UNIT-III
UML Introduction: Why we Model, Introducing the UML, Elements of UML.

Advanced Structural Modeling: Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages, Instances, Object Diagrams, Components.

UNIT-IV

Advanced Behavioral Modeling: Events and Signals, State Machines, Processes and Threads, Time and space, State Chart Diagrams.

UNIT-V

Suggested Reading:

BIT 354

ARTIFICIAL INTELLIGENCE

Instruction: 4 Periods per week
Duration: 3 Hours
University Examination: 75 Marks
Sessional: 25 Marks

UNIT-I
Game Playing: Bounded Look-ahead Strategy and use of Evaluation Functions, Alpha-Beta Pruning

UNIT-II

UNIT-III

UNIT-IV
Artificial Neural Networks: Introduction, Artificial Neural Networks, Single-Layer Feed-Forward Networks, Multi-Layer Feed-Forward Networks, Radial-Basis Function Networks, Design Issues of Artificial Neural Networks, Recurrent Networks.

UNIT-V
Advanced Knowledge Representation Techniques: Case Grammars, Semantic Web
Natural Language Processing: Introduction, Sentence Analysis Phases, Grammars and Parsers, Types of Parsers, Semantic Analysis, Universal Networking Knowledge.

Suggested Reading:

BIT 355

DESIGN AND ANALYSIS OF ALGORITHMS

Instruction 4 periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT-I
Introduction: Algorithm Specification, Performance analysis, Space Complexity, Time Complexity, Asymptotic Notation (O, Omega, Theta), Practical Complexities, Performance Measurement, Review of elementary data structures, Heap and Heap Sort, Hashing, Set representation, UNION, FIND.

UNIT-II

UNIT-III
Dynamic Programming And Traversal Technique: Multistage graph, All Pair Shortest Path, Optimal Binary Search trees, 0/1 Knapsack, Reliability Traveling Salesman Problem, Bi connected Components and Depth First Search.

UNIT-IV
Backtracking and Branch and Bounds: 8-Queens Problem, Graph Coloring Hamilton cycle, Knapsack Problem, 0/1 Knapsack Problem, Traveling salesperson problem, Lower-Bound Theory.

UNIT-V

Suggested Reading:


BIT 356

COMPUTER GRAPHICS

Instruction 4 periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT-I

Graphics Systems and Models: Graphics system; Images; Physical and synthetic; Imaging system; synthetic camera model; programming interface ; graphics architectures programmable pipelines; performance characteristics.

Graphics Programming: Programming two-dimensional applications; OpenGL API; Primitives and attributes; color; viewing, control functions.

UNIT-II

Input and Interaction: Input device; clients and servers; displays lists; display lists and modeling; programming event driven input; picking ; building interactive models; animating Interactive programs; logic operations.

Geometric Objects: Three - dimensional primitives; coordinates systems and frames; frames in OpenGL; Modeling colored cube.

UNIT-III

Transformations: Affine Transformations; Transformations in homogenous coordinates; concatenation of Transformations; OpenGL transformation matrices.
Viewing: Classical and Computer views; Viewing with a computer; Positioning of camera; Simple projections; Projections in OpenGL; Hidden surface removal; Parallel-projection matrices; Perspective projection matrices.

UNIT-IV

Lighting and Shading: Light sources; The Phong lighting model; Computational vectors; Polygonal shading; Light sources in OpenGL; Specification of matrices in OpenGL; Global illumination.

From Vertices To Frames: Basic implementation strategies; line-segment clipping; polygon clipping; clipping of other primitives; clipping in three dimensions; Rasterization ; Bresenham’s algorithm; Polygon Rasterization ; Hidden surface removal; anti-aliasing; display considerations.

UNIT-V

Modelling & Hierarchy: Hierarchal models; trees and traversal; use of tree data structure; animation; Graphical objects; Scene graphs; Simple scene graph API; Open Scene graph; other tree structures.

Curves and Surfaces: Representation of curves and surfaces; design criteria; Bezier curves and surfaces; Cubic B-splines; General B-splines; rendering curves and surfaces; curves and surfaces in OpenGL.

Suggested Readings:
DATA WAREHOUSING & DATA MINING

Instruction 4 periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks

Unit – I
Introduction: What is Data Mining, Data Mining Functionalities, Classification of Data Mining Systems, Major Issues in Data Mining.
Data Preprocessing: Preprocessing, Descriptive Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.

Unit – II
Data Warehouse and OLAP Technology: What is Data Warehouse, A Multidimensional Data Model, Data Warehouse Architecture and Implementation, from Data Warehousing to Data Mining. Mining Frequent Patterns, Associations Rules: Basic Concepts, Efficient and Scalable Frequent Item Set Mining Methods, Mining Various kinds of Association Rules.

Unit – III
Classification and Prediction: Introduction, Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule based Classification, Classification by Back Propagation, Support Vector Machines, Associative classification, Other classification Methods, Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor.

Unit – IV
Cluster Analysis: Introduction, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid Based Methods, Model Based Clustering Methods, Clustering High Dimensional Data, Outlier Analysis.
Mining Streams, Time-Series, and Sequence Data: Mining Data Streams, Mining Time-Series Data, and Mining Sequence Patterns in Transactional Databases and Biological Data:

Unit – V
Mining Object, Spatial, Multimedia, Text, and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web.

Suggested Reading:
BIT 358

SOFTWARE TESTING

Instruction 4   Periods per week
Duration 3   Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT-I
Introduction: Software-Testing, Terminology and Methodology, Verification and Validation.

UNIT-II

UNIT-III

UNIT-IV
Testing Object Oriented Software, Testing Web Based Systems, Debugging.

UNIT-V

Suggested Reading:

BIT359

DIGITAL INSTRUMENTATION & CONTROL

Instruction 4  Periods per week
Duration 3  Hours
University Examination 75 Marks
Sessional 25 Marks

UNIT –I
Introduction to process control Introduction, control systems, process control block diagram, control system evaluation, time response, significance and statistics. Analog signal conditioning. principles of analog signal conditioning, passive circuits, op amps, op-amps in instrumentation, Industrial Electronics.


UNIT – II
Thermal Sensors: Metal resistance Vs temperature devices, thermistors, thermocouples, bimetal strips, Gas thermometer, vapor pressure thermometer, liquid expansion thermometer, solid state temperature sensors.
Mechanical Sensors displacement, location or position sensors, strain sensors, motion sensors, pressure sensors, flow sensors.

UNIT –III
Optical Sensors: Fundamentals of EM radiation, photo detectors, pyrometry, optical sources, applications.
Final control: Final Control operation, signal conversions, actuators, control elements.

UNIT – IV
Discrete–state process control: Definition, characteristics of the system, ladder diagram, Programmable logic controllers.
Controller principles: Process characteristics, control system parameters, discontinuous, continuous and composite controller modes.

UNIT – V
Analog controllers: Electronic controllers, pneumatic controllers, design considerations. Digital Controllers Digital electronics methods, computers in process control, characteristics of digital data, controller software.
Control loop characteristics: Control system configurations, multivariable control systems, control system quality, stability, process loop tuning.

Suggested Reading:
BIT 381

OOSD & COMPILER CONSTRUCTION LAB

Instruction: 3 Periods per week
Duration: 3 Hours
University Examination: 50 Marks
Sessional: 25 Marks

COMPILER CONSTRUCTION LAB: Exercises must be taken from 1 to 6

OBJECT – ORIENTED ANALYSIS & DESIGN LAB: Exercises must be taken from 7 to 12

1. Scanner programs using LEX
2. SLR Parser table generation
3. LR Parser table generation
4. Parser Generation using YACC
5-6 Program on Code generation & Code Optimization
7. System Definition
   a) Requirements Management
   b) Data Modeling
8. Software Development
   a) Application & Web modeling
   b) Configuration Management
   c) Unit Testing
9. Content Management
10. System Testing
    a) Functional Testing
    b) Reliability Testing
    c) Performance Testing
    d) Defect & Change Tracking
11. Change Management
    a) Configuration Management
    b) Requirement Management
    c) System Documentation
12. Project Management
BIT 382

NETWORK PROGRAMMING LAB

Instruction 3 Periods per week
Duration 3 Hours
University Examination 50 Marks
Sessional 25 Marks

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois etc.
2. Implementation of concurrent and iterative echo server using both connection and connectionless socket system calls.
3. Implementation of time and day time services using connection oriented socket system calls.
4. Implementation of ping service
5. Build a web server using sockets.
6. Implementation of remote command execution using socket system calls.
7. Demonstrate the use of advanced socket system calls.
8. Demonstrate the non blocking I/O.
9. Implementation of concurrent chart server that allows current logged in users to communicate one with other.
10. Implementation of file access using RPC.
11. Build a concurrent multithreaded file transfer server using threads.
12. Implementation of DNS.

Suggested Reading:

1. Douglas E. Comer, Hands-on Networking with Internet Technologies, Pearson Education.
BIT 383

MINI PROJECT - IV

Instruction 3 Periods per week
Sessional 25 Marks

The Students are required to carry out Mini Project in any of the areas such as Computer Networks, Object Oriented System Development, and Compiler construction.

Students are required to submit a report on the Mini Project at the end of the Semester.