5.1 RELATIONAL DATABASE MANAGEMENT SYSTEM

	L	T	P
Periods/Week	4	-	4

RATIONALE

Database and database systems have become an essential component of everyday life in modern society. This course will acquaint the students with the knowledge of fundamental concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages. Oracle/My SQL/SQL Server can be use as package to explain concepts.

DETAILED CONTENTS

1. Introduction (06 Periods)

   Database Systems; Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems. Classification of DBMS Users, Database Administrators, Database Designers, End Users

2. Database System Concepts and Architecture (10 Periods)

   Data models, schemas, instances, data base state. DBMS Architecture, External level, The conceptual level, The internal level, Mappings. Data Independence; Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces. Classification of Database Management Systems

3. Data Modeling using E.R. Model (Entity Relationship Model) (10 Periods)

   Data Models Classification; File based or primitive models, traditional data models, semantic data models. Entities and Attributes, Entity types and Entity sets, Key attribute and domain of attributes, Relationship among entities

4. Relational Model: (10 Periods)

   Relational Model Concepts: Domain, Attributes, Tuples and Relations. Relational constraints and relational database schemes, Domain constraints, Key constraints and constraints on Null. Relational databases and relational database schemes, Entity integrity, referential integrity and foreign key, Joins, Relational Algebra.

5. Normalization (08 Periods)

   Concept of Normalization, Need of Normalization, Non-loss decomposition and functional dependencies, First, Second and Third normal forms, Boyce/Codd normal form.

6. T-SQL/SQL, PL/SQL Based on Oracle & SqlServer (20 Periods)

SQL: Data types, Create Delete Alter and Drop Tables, Manipulation Table Data, Accessing Metadata of Oracle and SQL server, Accessing Database objects of SslServer, Constraints, Pattern matching, Inbuilt functions of SqlServer, Temporary Tables, Table Variable, Inbuilt functions of SqlServer, Indexes, Views, Sequences, Join on multiple tables, Sub queries.

PL/SQL: User defined functions, Control Flow Statements of PL/SQL, Procedures/Stored Procedures, Transactions, Triggers, Cursor, and Granting Revoking Privileges.

INSTRUCTIONAL STRATEGY

Explanation of concepts should be done using real time examples, diagrams etc. For practical sessions, books along with CDs or learning materials with specified activities are required. Various exercises and small applications should be given along with theoretical explanation of concepts.

RECOMMENDED BOOKS

1) Fundamentals Of Database Systems, 5/E By Ramez Elmasri, Navathe Pearson Education India, New Delhi
2) Database System Concepts by Silberschatz, Korth and Sudarshan, McGraw-Hill, New Delhi
3) An introduction to database systems by Date C.J. Adison Wesley
4) An Introduction to Database Systems by Bipin C. Desai, Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi
5) Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley
6) Beginning T-SQL with Microsoft SQL Server 2005 and 2008 by Paul Turley, Dan Wood Wrox Wiley Dreamtech India (P) ltd New Delhi.
7) Beginning Microsoft SQL Server 2008 Programming Robert Vieira Wrox, Wiley Dreamtech India (P) ltd New Delhi.
8) Oracle Pl/Sql By Example, 4/E By Rosenzweig Pearson Education New Delhi.
9) Expert Oracle Pl/Sql By Hardman, Tata McGraw-Hill Education
10) Oracle 9I Pl/Sql Programming By Scott Urman Tata McGraw-Hill Education
11) SQL, PL/SQL by Ivan Baliross
12) RDBMS by P.K. Yadav, Kalson Publishers.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	06	10
2	10	15
3	10	15
4	10	15
5	08	15
6	20	30
Total	**64**	**100**

5.2 JAVA PROGRAMMING

	L	T	P
Periods/Week	5	-	4

RATIONALE

This course enables student to learn basics concepts of java programming language, java technology, applications of java in web development also able to write programs in java, servlet and JSP. After Completion of this course student will be able to work with java technology environment and develop a small web applications using java technology.

DETAILED CONTENTS

1. Introduction to Java (10 Periods)

   A brief history, Introduction to OOPS, Java Virtual Machine (JVM), Java In Time (JIT) compiler, Java features, comparison with C and C++, set java class path, environment variables.

2. Java Fundamentals (16 Periods)

   Introduction to classes and object, defining class, scope rules, reference variable and reference value, Initializing Local Variables, constructors, primitive data types, initial value for variables, arithmetic logical and bitwise operators, new, equality, instance-of operator, conditional operator, control flow statements, for-each loop, Widening and Narrowing Conversions, assigning and casting reference values, java methods, arrays, Anonymous Arrays, Multidimensional Arrays, Enum, Typesafe Enums, Enum Constructors and Members, Implicit Static Methods for Enum Types, Inherited Methods from the Enum Class, parameter passing, passing object reference value, passing array reference value, final parameter, final Parameters, Variable Arity Methods, Calling a Varargs Method command line arguments.

3. Object Oriented Programming (16 Periods)

   Member Accessibility Modifiers, Other Modifiers for Members, Instance members, static members, instance initializer block, static initializer block, constructor chaining, class hierarchy, Anonymous Class, Static Class, Inheritance, Constructor Overloading, Method Overloading, Method Overriding and Hiding, super, this, final, string class, Inheritance vs Aggregation, Nested Classes and Interfaces, Static Member Classes and Interfaces, Non-static Member Classes, Local Classes, Nested Type Declarations, Local Class, Anonymous Class, Fundamental Classes: The Object Class, The Wrapper Classes, The Math Class, The String Class, The StringBuffer Class, Garbage collection. Printwriter Class.

4. Exception Handling & Garbage Collection (12 Periods)

Exception, Exception Types, Checked and Unchecked Exceptions, Exception Class Hierarchy, Exception handling (try, catch, finally), Throw Statement, throws clause, creating your own exception classes, Object Finalization, Finalizer Chaining, Invoking Garbage Collection Programmatically.

5. Interfaces, Packages & Generics (14 Periods)

Abstract class, interface, Implementing Interface, Adapter classes, packages, Import package, jar file, Introducing Generics, Generic Types, Parameterized Types, Generic Interfaces, Generic Reference Assignment, Call Set and Get Methods

6. Multi-threading & Java Data Base Connectivity (JDBC) (12 Periods)

Overview of Threads, Thread Creation, Synchronization, Thread Transitions
Overview, Two and Three Tier Application, JDBC Drivers, Accessing Database using JDBC

LIST OF PRACTICALS

1. Programming exercise on control flow statements in Java
2. Programming exercise on Arrays and String
3. Programming exercise on inheritance
4. Write Program for exception handling
5. Write programs for Multithreading
6. Programming exercise on Java applets
7. Write program for Java Data base connectivity
8. Mini project on Java

INSTRUCTIONAL STRATEGY

The subject deals with object oriented concept. As the subject has both theory and practical, more stress should be given to practical work.

RECOMMENDED BOOKS

1. The Complete Reference Java by Herbel Schildt; McGraw Hill, New Delhi
2. Java Programming by T. Balagurusamy, Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Core Java Volume-1 and Volume-2 by Cay S Horseman and Lray Carnell Pearson Education New Delhi.
4. Computer Programming in Java, W C/D by Junaid Khateeb, Wiley-India Pvt Ltd. Daryaganj, New Delhi

5. A Set of Books on Java by Sun Microsystems, Pearson Education New Delhi.
6. A Programmer's Guide to Java SCJP Certification: A Comprehensive Primer by Khalid Azim Mughal, Rolf Rasmussen Pearson Education, New Delhi
7. OOPS Using Java by Thampi, Dream Tech. Press.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	10	15
2	16	20
3	16	20
4	12	15
5	14	15
6	12	15
Total	**80**	**100**

5.3 E-COMMERCE

	L	T	P
Periods/Week	4	-	-

RATIONALE

This Course Enables Students to learn basic concepts of Electronics Commerce this includes Electronic Data Interchange (EDI), Electronic Mail and Electronic Fund Transfer (EFT), Internet Banking, Credit Card, Debit Card etc. After Completion of this course student is able to understand e-commerce and its applications.

DETAILED CONTENTS

1. Introduction (06 Periods)

   Electronic commerce and physical commerce, The DIGITAL phenomenon, Looking at e-commerce from different perspectives, Different types of e-commerce, Examples of the types of e-commerce, Some e-commerce scenarios, Effect of e-commerce, Advantages of e-commerce, Myths about e-commerce development and implementation

2. Architectural Frame Work & Security (10 Periods)

   Web architecture – web browser, HTTP, TCP/IP, Web server, HTML, Standards– EDIFACT, EDI, Firewalls and proxy, application gateways, Secure Electronic Transaction (SET), public and private key encryption, digital signatures and digital certificates, Secure, Socket Layer (SSL).

3. Electronic Payment Systems (08 Periods)

   Digital cash, electronic signatures, Debit cards at Point of Sale (POS), Smart, Cards, Online Credit Card based Systems, Electronic Fund Transfer (EFT), Payment gateways, Case Study Online Reservation, Internet Banking.

4. Electronic Commerce Applications and E-Service (16 Periods)

   E-Commerce Banking, Online shopping, Business Models and Revenue Models, On-line publishing, E-commerce in retailing industry, Digital Copyrights, Electronic Data Interchange, Electronic Fund Transfer, Electronic Bulletin Boards, Electronic Catalogue, Tools for e-commerce: Cold fusion, e-shop.
   E-Governance, issues, latest scenario of e-commerce in India, resources required for implementing an E-Governance project, guidelines, Case Study of Bhoolekh, Ekosh, Janadhaar Portals.

5. Enterprise Resource Planning (ERP) (12 Periods)

   ERP Introduction, Benefits, Origin, Evolution and Structure: Conceptual Model of ERP, The Evolution of ERP, The Structure of ERP, Business Process

Reengineering, Data ware Housing, Data Mining, Online Analytical Processing(OLAP), Product Life Cycle, Management(PLM),LAP, Supply chain Management,

6. ERP Marketplace & ERP Implementation (12 Periods)

Market Overview, Marketplace Dynamics, Functional Modules of ERP Software, Integration of ERP, Supply chain and Customer Relationship Applications, Implementation Basics, ERP Implementation Life Cycle, Role of SDLC/SSAD, Object Oriented Architecture, Consultants, Vendors and Employees

INSTRUCTIONAL STRATEGY

The teacher should take the help of inter-net and latest trends to teach this subject effectively. Every topic should be completed with suitable examples and case studies

RECOMMENDED BOOKS

1. Electronic Commerce – A Manager's Guide by Ravi Kalakota and Andrew B, Whinston; Addison Wesley (Singapore) Pvt Ltd, New Delhi

2. E-Business – Roadmap for Success" by Ravi Kalakota and Maxia Robinson; Addison Wesley (Singapore) Pvt Ltd, New Delhi

3. E-Business (R) Evolution by Amor; Addison Wesley (Singapore) Pvt Ltd, New Delhi Ontiers of Electronic Commerce by Ravi Kalakota and Andrew B. Whinston; Addison Wesley (Singapore) Pvt Ltd, New Delhi

4. E-Business with Net Commerce (with CD) by Shurety; Addison Wesley (Singapore) Pvt Ltd, New Delhi

5. E-commerce: Fundamentals and Applications by Henry Chan, Praymond Lee, Tharam Dillon, Elizabeth Chang, ISBN, 0-471-49303-1, Wiley Eastern Publication

6. ERP: Making It Happen: The Implementers' Guide to Success with Enterprise Thomas F. Wallace, Michael H. Kremzar, NetLibrary, Inc

7. Enterprise Resource Planning: Global Opportunities and Challenges, Liaquat Hossain, Jon David Patrick, Mohammad A. Rashid

8. Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning– Concepts and Practice", PHI

9. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	06	10
2	10	10
3	08	15
4	16	25
5	12	20
6	12	20
Total	**64**	**100**

5.4 CRYPTOGRAPHY AND NETWORK SECURITY

	L	T	P
Periods/ Week	4	-	-

RATIONALE

This course has been designed by keeping in view the basic computer users and information system managers. The concepts needed to read through the ripe in the market place and understanding risks and how to deal with them. It is hoped that the student will have a wider perspective on security in general and better understanding of how to reduce and manage the security risks.

DETAILED CONTENTS

1. Introduction (12 Periods)

   Need for securing a network; attacks from within and external, introduction to cyber crime, cyber law-Indian Perspective (IT Act 2000), cyber ethics, ethical hacking. What is hacking. attacker etc.

2. Securing Data over Internet (12Periods)

   Introduction to basic encryption and decryption, concept of symmetric and asymmetric key cryptography, Cipher technique PPTP/L2TP, overview of DES, RSA and PGP. Introduction to Hashing: MD5, SSL, SSH, HTTPS, Digital Signatures.

3. Virus, Worms and Trojans (10 Periods)

   Definitions, preventive measures – access central, checksum verification, process neutering, virus scanners, neuristic scanners, application level virus scanners, deploying virus protection.

4. Computer Network Attacks: (08 Periods)

   Active Attacks, Passive Attacks, Stealing Passwords, Social Engineering, Bugs and Backdoors, Authentication Failures, Protocol Failures, Information Leakage, Denial-of-Service Attacks, Botn ets, Phishing Attacks

5. Firewalls (08 Periods)

   Definition and types of firewalls, defining access control policies, address translation, firewall logging, firewall deployment

6. Intrusion Detection System (IDS) (06 Periods)

Introduction; IDS limitations – teardrop attacks, counter measures; Host based IDS set up

7. Virtual Private Network (VPN) (08 Periods)
Basics, setting of VPN, VPN diagram, configuration of required objects, exchanging keys, modifying security policy

INSTRUCTIONAL STRATEGY

Since the facilities are not available in the polytechnic, students need exposure to various security systems and software available in some organizations, universities and engineering colleges. For this, visits may be organized for students. The teachers should also be exposed in this area. Some practical can be conducted in the laboratory.

RECOMMENDED BOOKS

1. Cryptography and Network Security by Forouzon, Tata Mc Graw Hill Education Pvt Ltd, New Delhi
2. Cryptography and Network Security by Atul Kahate, Tata Mc Graw Hill Education Pvt Ltd, New Delhi
3. Cryptography and Network Security by Padmanabham, Wiley India Pvt Ltd. Daryaganj, New Delhi
4. Network Security by Eric Cole, Bible, Wiley- India Pvt Ltd. Daryaganj, New Delhi
5. Network security by William Stalling

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	12	20
2	12	20
3	10	10
4	08	15
5	08	10
6	06	10
7	08	15
Total	**64**	**100**

5.5 SOFTWARE QUALITY AND TESTING

	L	T	P
Periods/Week	4	–	2

RATIONALE

The Course is aimed at teaching different techniques of testing a software after it is developed and to teach about various quality standards of a product. After completion of the course, the students will be able to design efficient test-cases for different software and compare it to the standard quality measures.

DETAILED CONTENTS

1. Introduction (08 Periods)

Review of Software Engineering, Software Process Models, Metrics, Importance of Software Testing and Quality Assurance.

2. Software Quality Assurance Concepts and Standards (10 Periods)

Definition of Quality, Quality Concepts, Quality Control, Quality Assurance, SQA Activities, Software Reviews, Inspections, Walkthroughs, Formal Technical Reviews, Review Guidelines, Quality Assurance Standards, ISO 9000, ISO 9001:2000, ISO 9126, CMM, TQM, TQM principles, Six Sigma, SPICE.

3. Risk Management and Configuration Management (10 Periods)

Types of Software Risks, Risks Identification, Risk Projection, Risk Refinement, The RMMM Plan, Software Configuration Management, Baselines, Software Configuration Items, SCM Process: Version Control, Change Control.

4. Software Testing (10 Periods)

Testing Fundamentals, Verification and Validation, Test Strategies for Conventional and Object Oriented Software, Unit Testing, Integration Testing, Validation Testing, Alpha and Beta Testing, Recovery Testing, Security Testing, Stress Testing, Performance Testing, Debugging Process, Debugging Strategies.

5. Testing Techniques (10 Periods)

Black Box and White Box Testing techniques, Flow Graph Notation, Basis Path Testing, Control Structure Testing, Equivalence Partitioning, Boundary Value Analysis, Object Oriented Testing Methods: Applicability of Conventional Test Case Design Methods, Fault-Based Testing, Scenario-Based Testing, Random Testing and Partition Testing for Classes, Interclass Test Case Design.

6. Testing Process (08 Periods)

Test Plan Development, Requirement Phase, Design Phase and Program Phase Testing, Testing Tools, Features of test tools, guidelines for selecting a test tool, advantages and disadvantages of using testing tools, testing using automated tools.

7. Testing Specialized Systems (08 Periods)

Testing Client/Server Systems, Testing Web based Systems, Testing Off-the-Shelf software.

LIST OF PRACTICALS

1. Study of open source quality assurance and software testing tools.
2. Use of software testing tools like CPPUnit, JUnit.
3. Use of configuration management tools like CVS, VSS.
4. Study of test cases/design of TC
5. Study of test plan/preparation of TP
6. Study of Bug report/preparation of BR
7 Study and preparation of SRS

INSTRUCTIONAL STRATEGY

Since the subject has wider industrial scope, students need exposure to various open source testing tools and teachers should also be exposed in testing tools. Visits may be organized in software and testing industries.

RECOMMENDED BOOKS

1. Software Testing: Principles, Techniques and Tools by M.G. Limaye; Tata McGraw Hill
2. Software Engineering: A Practitioner's Approach by R.S. Pressman; Tata McGraw-Hill.
3. Effective Methods for Software Testing William E.Perry; John Wiley & Sons.
4. Software Engineering by Ian Sommerville; Pearson Education.
5. Software Engineering by K.K. Aggarwal, Yogesh Singh; New Age International.

6. Software Quality Assurance-Principles and Practice by Nina S Godbole; Narosa.
7. Software Testing Techniques by Boris Beizer,Dreamtech
8. Software Engineering by Rajiv Mall
9. Software Engineering by Pankaj Jalole
10. Software Testing and Quality Assurance by Naik; Wiley India Publications

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	08	10
2	10	20
3	10	15
4	10	15
5	10	20
6	08	10
7	08	10
Total	**64**	**100**

5.6 ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

	L	T	P
Periods/Week	5	-	-

RATIONALE

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. This subject focuses on imparting the necessary competencies and skills of enterprise set up and its management.

DETAILED CONTENTS

SECTION – A ENTREPRENEURSHIP

1. Introduction (23 periods)

- Concept /Meaning and its need
- Qualities and functions of entrepreneur and barriers in entrepreneurship
- Sole proprietorship and partnership forms of business organisations
- Schemes of assistance by entrepreneurial support agencies at National, State, District level: NSIC, NRDC, DC:MSME, SIDBI, NABARD, Commercial Banks, SFC's TCO, KVIB, DIC, Technology Business Incubator (TBI) and Science and Technology Entrepreneur Parks (STEP)

2. Market Survey and Opportunity Identification (17 periods)

- Scanning of business environment
- Salient features of National and State industrial policies and resultant business opportunities
- Types and conduct of market survey
- Assessment of demand and supply in potential areas of growth
- Identifying business opportunity
- Considerations in product selection

3. Project report Preparation (14 periods)

- Preliminary project report
- Detailed project report including technical, economic and market feasibility
- Common errors in project report preparations
- Exercises on preparation of project report

SECTION –B MANAGEMENT

4. Introduction to Management (06 periods)

- Definitions and importance of management
- Functions of management: Importance and Process of planning, organising, staffing, directing and controlling
- Principles of management (Henri Fayol, F.W. Taylor)
- Concept and structure of an organisation
- Types of industrial organisations

a) Line organisation
b) Line and staff organisation
c) Functional Organisation

5. Leadership and Motivation (05 periods)

a) Leadership

- Definition and Need
- Qualities and functions of a leader
- Manager Vs leader
- Types of leadership

b) Motivation

- Definitions and characteristics
- Factors affecting motivation
- Theories of motivation (Maslow, Herzberg, McGregor)

6. Management Scope in Different Areas (10 periods)

a) Human Resource Management

- Introduction and objective
- Introduction to Man power planning, recruitment and selection
- Introduction to performance appraisal methods

b) Material and Store Management

- Introduction functions, and objectives
- ABC Analysis and EOQ

c) Marketing and sales

- Introduction, importance, and its functions
- Physical distribution
- Introduction to promotion mix
- Sales promotion

d) Financial Management

- Introductions, importance and its functions
- Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT

7. Miscellaneous Topics (05 periods)

a) Customer Relation Management (CRM)

- Definition and need
- Types of CRM

b) Total Quality Management (TQM)

- Statistical process control
- Total employees Involvement
- Just in time (JIT)

c) Intellectual Property Right (IPR)

- Introductions, definition and its importance
- Infringement related to patents, copy right, trade mark

Note: In addition, different activities like conduct of entrepreneurship awareness camp extension lecturers by outside experts, interactions sessions with entrepreneurs and industrial visits may also be organised.

INSTRUCTIONAL STRATEGY

Some of the topics may be taught using question/answer, assignment or seminar method. The teacher will discuss stories and case studies with students, which in turn will develop appropriate managerial and entrepreneurial qualities in the students. In addition, expert lecturers may also be arranged from outside experts and students may be taken to nearby industrial organisations on visit. Approach extracted reading and handouts may be provided.

RECOMMENDED BOOKS

1. A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; Aapga Publications, Panchkula (Haryana)
2. Entrepreneurship Development published by Tata McGraw Hill Publishing Company Ltd., New Delhi
3. Entrepreneurship Development in India by CB Gupta and P Srinivasan; Sultan Chand and Sons, New Delhi
4. Entrepreneurship Development - Small Business Enterprises by Poornima M Charantimath; Pearson Education, New Delhi
5. Entrepreneurship : New Venture Creation by David H Holt; Prentice Hall of India Pvt. Ltd., New Delhi
6. Handbook of Small Scale Industry by PM Bhandari
7. Principles and Practice of Management by L M Prasad; Sultan Chand & Sons, New Delhi.
8. Entrepreneurship by Alpana Trehan; Dream Tech. Press
9. Entrepreneurship by Manimali; Viz Tantra Publications
10. Patterns of Entrepreneurship by Kalpana; Wiley India Publications.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Pds)	Marks Allotted (%)
1	23	28
2	17	20
3	14	16
4	6	10
5	5	06
6	10	14
7	5	06
Total	**80**	**100**

5.7 MINOR PROJECT WORK

	L	T	P
Periods/Week	-	-	4

Minor project work aims at exposing the students to the various industries dealing with computers. It is expected from them to get acquainted with computer environment possess desired attitudes. For this purpose student during middle of the course are required to be sent for a period of two to four weeks at a stretch in different establishments. Depending upon the interest of students they are sent for exposure to:

1) Industrial practices in installation and maintenance of computers and computer networks
2) Online examination/reservation system
3) Fault diagnosis and testing of computers
4) Industrial practices in respect of documentation and fabrication
5) Working of simulator
6) Software package development organizations/Software modules on college administration
7) Maintenance of database
8) Write be stored procedure or functions which can be attached as the library objects to the main projects
9) Dynamic website design using PHP, MySQL web language
10) Write a procedure function to convert all data function (create your own) Database connectivity, (SQL server, Oracle, Access), Library classes in C++ (same application)., use of graphics in C++, Encryption decryption program, Active-X controls in VB.

Note: The teachers may guide /help students to identify their minor project work and chalk out their plan of action well in advance.

As a minor project activity each student is supposed to study the operations at site and prepare a detail project report of the observations/processes/activities by him/her. The students should be guided by the respective subject teachers; each teacher may guide a group of 4 to 5 students.

The teachers along with field supervisors/engineers will conduct performance assessment of students. Criteria for assessment will be as follows:

Sr No	**Criteria**	**Weightage**
1.	Attendance and Punctuality	15%
2.	Initiative in performing tasks/creating new things	30%
3.	Relation with people	15%
4.	Report Writing	40%