Annexure No.	32 E
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046

REGULATIONS FOR B.Sc. COMPUTER TECHNOLOGY DEGREE COURSE
with Semester System

(Effective from the academic year 2007-2008)

1. **Eligibility for Admission to the Course**
   Candidate for admission to the first year of the B.Sc. COMPUTER TECHNOLOGY degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu with any one of the following subjects: Mathematics / Computer Science / Statistics / Business Mathematics or other examinations accepted as equivalent there to by the Syndicate, subject to such other conditions as may be prescribed there for.

2. **Duration of the Course**
   The course shall extend over a period of three years comprising of six semesters with two semesters in one academic year. There shall not be less than 90 working days for each semester. Examination shall be conducted at the end of every semester for the respective subjects.

3. **Course of Study**
   The course of study for the B.Sc. COMPUTER TECHNOLOGY degree course shall consist of the following

   a) Part - I
   Tamil or any one of the following modern/classical languages i.e. Telugu, Kannada, Malayalam, Hindi, Sanskrit, French, German, Arabic & Urdu. It shall be offered for the first two semesters with one examination at the end of each semester.

   b) Part – II : English
   The subject shall be offered during the first two semesters with one examination at the end of each semester. During third semester the subject communication skills will be offered as one of the core subject.

   c) Foundation Course
   The Foundation course shall comprise of two stages as follows:
   Foundation Course A : General Awareness (I & II semesters)
   Foundation Course B : Environmental Studies (III & IV semesters)

   The syllabus and scheme of examination for the foundation course A, General awareness shall be apportioned as follows.
   From the printed material supplied by the University   -   75%
   Current affairs & who is who?   -   25%
   The current affairs cover current developments in all aspects of general knowledge which are not covered in the printed material on this subject issued by the University.
   The Foundation course B shall comprise of only one paper which shall have Environmental Studies.

   d) Part – III
   Group A : Core subject – As prescribed in the scheme of examination.
   Examination will be conducted in the core subjects at the end of every semester

Group B: allied subjects -2 subjects-4 papers

Examination shall be conducted in the allied subjects at the end of first four semesters.

Group C: application oriented subjects: 2 subjects – 4 papers

The application –oriented subjects shall be offered during the last two semesters of study viz., V and VI semesters. Examination shall be conducted in the subjects at the end of V & VI semesters.

Group D: field work/institutional training

Every student shall be required to undergo field work/institutional training, related to the application-oriented subject for a period of not less than 2 weeks, conveniently arranged during the course of 3rd year. The principal of the college and the head of the department shall issue a certificate to the effect that the student had satisfactorily undergone the field work/institutional training for the prescribed period.

Diploma Programme:

All the UG programmes shall offer compulsory diploma subjects and it shall be offered in four papers spread over each paper at the end of III, IV, V, & VI semesters.

e) **Co-Curricular activities: NSS/NCC/Physical education**

Every student shall participate compulsorily for period of not less than two years (4 semesters) in any one of the above programmes.

The above activities shall be conducted outside the regular working hours of the college. The principal shall furnish a certificate regarding the student's performance in the respective field and shall grade the student in the five point scale as follows

A-Exemplary

B-very good

C-good

D-fair

E-Satisfactory

This grading shall be incorporated in the mark sheet to be issued at the end of the appropriate semester (4th or 5th or 6th semester).

(Handicapped students who are unable to participate in any of the above activities shall be required to take a test in the theoretical aspects of any one of the above 3 field and be graded and certified accordingly).

4. **Requirement to appear for the examinations**

   a) a candidate will be permitted to appear for the university examinations for any semester if

       i)   He/she secures not less than 75% of attendance in the number of working days during the semester.

       ii)   He/she earns a progress certificate from the head of the institution, of having satisfactory completed the course of study prescribed in the subjects as required by these regulations, and

       iii)   His/her conduct has been satisfactory.

   Provided that it shall be open to the syndicate, or any authority delegated with such powers by the syndicate, to grant exemption to a candidate who has failed to earn 75% of the attendance prescribed, for valid reasons, subject to usual conditions.

   b) A candidate who has secured less than 65% but 55% and above attendance in any semester has to compensate the shortage in attendance in the subsequent semester besides, earning the required percentage of attendance in that semester and appear for both semester papers together at the end of the latter semester.

c) A candidate who has secured less than 55% of attendance in any semester will not be permitted to appear for the regular examinations and to continue the study in the subsequent semester. He/she has to rejoin the semester in which the attendance is less than 55%

d) A candidate who has secured less than 65%of attendance in the final semester has to compensate his/her attendance shortage in a manner as decided by the concerned head of the department after rejoining the same course.

5. **Restrictions to appear for the examinations**
   a) Any candidate having arrear paper(s) shall have the option to appear in any arrear paper along with the regular semester papers.
   b) "Candidates who fail in any of the papers in Part I, II & III of UG degree examinations shall complete the paper concerned within 5 years form the date of admission to the said course, and should they fail to do so, they shall take the examination in the texts/ revised syllabus prescribed for the immediate next batch of candidates. If there is no change in the texts/syllabus they shall appear for the examination in that paper with the syllabus in vogue until there is a change in the texts or syllabus. In the event of removal of that paper consequent to change of regulation and / or curriculum after 5 year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulation/ curriculum for the award of the degree.

6. **Medium of Instruction and examinations**
   The medium of instruction and examinations for the papers of Part I and II shall be the language concerned. For part III subjects other than modern languages, the medium of instruction shall be either Tamil or English and the medium of examinations is in English/Tamil irrespective of the medium of instructions. For modern languages, the medium of instruction and examination will be in the languages concerned.

7. **Submission of Record Note Books for practical examinations**
   Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates will not be permitted to appear for the practical examinations. However, in genuine cases where the students, who could not submit the record note books, they may be permitted to appear for the practical examinations, provided the concerned Head of the department from the institution of the candidate certified that the candidate has performed the experiments prescribed for the course. For such candidates who do not submit Record Books, zero (0) marks will be awarded for record note books.

8. **Passing Minimum**
   a) A candidate who secures not less than 40% of the total marks in any subject including the Diploma and Foundation courses (theory or Practical) in the University examination shall be declared to have passed the examination in the subject (theory or Practical).
   b) A candidate who passes the examination in all the subjects of Part I, II and III (including the Diploma and Foundation courses) shall be declared to have passed, the whole examination.

9. **Improvement of Marks in the subjects already passed**
   Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

10. **Classification of Successful candidates**
    a) A candidate who passes all the Part III examinations in the First attempt within a period of three years securing 75% and above in the aggregate of Part III marks shall be declared to have passed B.A/ B.Sc./B.Com./B.B.M. degree examination in **First Class with Distinctions**
    b) (i) A candidate who passes all the examinations in Part I or Part II or Part III or Diploma securing not less than 60 per cent of total marks for concerned part shall be declared to have passed that part in **First Class**

(ii) A candidate who passed all the examinations in Part I or Part II or Part III or Diploma securing not less than 50 per cent but below 60 per cent of total marks for concerned part shall be declared to have passed that part in **Second Class**

(iii) All other successful candidates shall be declared to have passed the Part I or Part II or Part III or Diploma examination in **Third Class**

11. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she,

i. has undergone the prescribed course of study for a period of not less than six semesters in an institution approved by/affiliated to the University or has been exempted from in the manner prescribed and has passed the examinations as have been prescribed therefor.

ii. Has satisfactory participates in either NSS or NCC or Physical Education as evidenced by a certificate issued by the Principal of the institution.

iii. Has successfully completed the prescribed Field Work/ Institutional Training as evidenced by certificate issued by the Principal of the College.

12. Ranking

A candidate who qualifies for the UG degree course passing all the examinations in the first attempt, within the minimum period prescribed for the course of study from the date of admission to the course and secures I or II class shall be eligible for ranking and such ranking will be confined to 10 % of the total number of candidates qualified in that particular branch of study, subject to a maximum of 10 ranks.

The improved marks will not be taken into consideration for ranking.

13. Additional Degree

Any candidate who wishes to obtain an additional UG degree not involving any practical shall be permitted to do so and such candidate shall join a college in the III year of the course and he/she will be permitted to appear for par III alone by granting exemption form appearing Part I, Part II and common allied subjects (if any), already passed by the candidate. And a candidate desirous to obtain an additional UG degree involving practical shall be [permitted to do so and such candidate shall join a college in the II year of the course and he/she be permitted to appear for Part III alone by granting exemption form appearing for Part I, Part II and the common allied subjects. If any, already passed. Such candidates should obtain exemption from the university by paying a fee of Rs.500/-.

14. Evening College

The above regulations shall be applicable for candidates undergoing the respective courses in Evening Colleges also.

15. Syllabus

The syllabus for various subjects shall be clearly demarcated into five viable units in each paper/subject.

16. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

17. Transitory Provision

Candidates who have undergone the Course of Study prior to the Academic Year 2007-2008 will be permitted to take the Examinations under those Regulations for a period of four years i.e. up to and inclusive of the Examination of April 2012 thereafter they will be permitted to take the Examination only under the Regulations in force at that time.

B.Sc.(COMPUTER TECHNOLOGY)
with
COMPULSORY DIPLOMA IN COMPUTER NETWORKING

SCHEME OF EXAMINATION FROM THE ACADEMIC YEAR 2007-08

SUBJECTS	INS. Hrs/Wk	Duration	Max. Marks
SEMESTER I			
1. PART-I: Language-I	6	3	100
2. PART-II: English-I	6	3	100
3. Core 1: DATA STRUCTURES AND C PROGRAMMING	4	3	100
4. Core 2: COMPUTER ORGANIZATION AND ARCHITECTURE	4	3	100
5. Core Lab 1: C PROGRAMMING LAB USING DATA STRUCTURES	4	3	100
6. Allied 1: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	4	3	100
7. Foundation Course-A (General Awareness)	2	-	-
SEMESTER II			
1. PART-I: Language-II	6	3	100
2. PART-II: English-II	6	3	100
3. Core 3: OBJECT ORIENTED PROGRAMMING WITH C++	6	3	100
4. Core Lab 2: PROGRAMMING IN C++ USING DATA STRUCTURES	5	3	100
5. Allied 2: COMPUTER ORIENTED NUMERICAL METHODS AND STATISTICS	5	3	100
6. Foundation Course-A (General Awareness)	2	3	100
SEMESTER III			
1. Core 4: COMMUNICATION SKILLS	4	3	100
2. Core 5: RDBMS AND ORACLE	5	3	100
3. Core 6: VISUAL PROGRAMMING (Visual Basic)	5	3	100
4. Core Lab 3: VISUAL PROGRAMMING LAB - VB with MS Access	5	3	100
5. Allied 3: MICROPROCESSORS AND ALP	6	3	100
6. Foundation Course-B (Environment Studies)	2	----	
7. Diploma 1 : DATA COMMUNICATION AND NETWORKS	3	3	100

SEMESTER IV			
1. Core 7: JAVA PROGRAMMING	6	3	100
2. Core 8: CLIENT/SERVER COMPUTING	6	3	100
3. Core Lab 4: PROGRAMMING LAB - JAVA	6	3	100
4. Allied 4: COMPUTER INSTALLATION AND SERVICING	6	3	100
5. Foundation Course-B (Environment Studies)	2	3	100
6. Diploma 2 (LAB): NETWORK LAB	4	3	100
SEMESTER V			
1. Core 9: MOBILE COMPUTING	6	3	100
2. Core 10: OPERATING SYSTEMS	5	3	100
3. Core 11: SOFTWARE ENGINEERING	5	3	100
4. AOS 1: GRAPHICS AND MULTIMEDIA	6	3	100
5. Core Lab 5: MULTIMEDIA	5	3	100
6. Diploma 3: NETWORK SECURITY AND MANAGEMENT	3	3	100
SEMESTER VI			
1. Core 12: COMPUTER AIDED DESIGN AND MANUFACTURING	5	3	100
2. Core 13: WEB TECHNOLOGY	5	3	100
3. Core 14: DATA MINING	5	3	100
4. AOS 2: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS	5	3	100
5. Core Lab 6: WEB TECHNOLOGY	6	3	100
6. Diploma 4 (Lab): NETWORK SECURITY	4	3	100
B.Sc. (CT) Course			3200
Diploma Course			400

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**I**
Subject	**CORE 1 : DATA STRUCTURES AND C PROGRAMMING**

Subject Description:
        This subject deals with the methods of data structures using C programming language.
Goal:
        To learn about C programming language using data structural concepts.
Objective:
        On successful completion of this subject the students should have :
                - Writing programming ability on data structures dealing with Stacks, Queues, List, Searching and Sorting algorithms etc.,

UNIT – I:

                Programming development methodologies – Programming style – Problem solving
techniques: Algorithm, Flowchart, Pseudocode - Structure of a C program – C character set – Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion.
        Operators and Expressions – Formatted and Unformatted I/O functions – Decision statements – Loop control statements.

UNIT – II:
        Arrays – String and its standard functions.
        Pointers – Functions – Preprocessor directives: #define, #include, #ifndef, Predefined macros.

UNIT – III:
        Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, Bit fields, Enumerated data types, Union.
        Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, Command line arguments, I/O redirection.

UNIT – IV:
        Linear data structures: Introduction to data structures – List: Implementations, Traversal, Searching and retrieving an element, Predecessor and Successor, Insertion, Deletion, Sorting, Merging lists – Stack: Representation, Terms, Operations on stack, Implementation.
        Single linked list, Linked list with and without header, Insertion, Deletion, Double linked list – Queues: Various positions of queue, Representation

UNIT V:
        Searching and Sorting – Searching: Linear, Binary.
        Sorting – Insertion, Selection, Bubble, Quick, Tree, Heap.

TEXT BOOK:
        Ashok N Kamthane, "PROGRAMMING AND DATA STRUCTURES" – Pearson Education, First Indian Print 2004, ISBN 81-297-0327-0.
REFERENCE BOOK:
   1. E Balagurusamy: Programming in ANSI C, Tata McGraw-Hill, 1998.
   2. Ellis Horowitz and Sartaj Sahni: Fundamentals of Data Structure, Galgotia Book Source, 1999.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**I**
Subject	**CORE 2 : COMPUTER ORGANISATION AND ARCHITECTURE**

Subject Description:
This subject deals with fundamentals of digital computers, Microprocessors and system architecture.

Goal:
To learn about computer fundamentals and its organization.

Objective:
On successful completion of this subject the students should have:
- Knowledge on digital circuits
- Interfacing of various components

Unit I

Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code.

Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

Unit II

Combinational Logic Circuits: Boolean algebra –Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications.
Sequential circuits: Flip-Flops: RS, D, JK, T - Multiplexers – Demultiplexers – Decoder – Encoder - Counters.

Unit III

CENTRAL PROCESSING UNIT: General register organization – control word – examples of Micro operations – Stack organization – Instruction formats – Addressing modes – Data transfer and manipulation control.

Unit IV

Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

Unit V

Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing Into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement.

Text Books:
1. Digital Electronics Circuits and Systems, V.K. PURI, TATA McGRAW-HILL Pub. Company
2. Computer System Architecture, M. MORRIS MANO, Pearson Education Pub, III Edition.

Reference Books:
ISRD group - TATA McGRAW-HILL

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**I**
Subject	**CORE LAB 1 : C PROGRAMMING LAB USING DATA STRUCTURES**

1. Write a C program to create two array list of integers. Sort and store the elements of both of them in the third list.

2. Write a C program to experiment the operation of STACK using array implementation.

3. Write a C program to create menu drive program to implement QUEUE to perform the following:
      I. Insertion
     II. Deletion
    III. Modification
     IV. Listing of elements using pointers

4. Write a C program to create LINKED LIST representation of employee records and do the following operations using pointers:
      I. To add a new record
     II. To delete an existing record
    III. To print the information about an employee
     IV. To find the number of employees in the structure

5. Write a C program to count the total nodes of the linked list.

6. Write a C program to insert an element at the end of the linked list.

7. Write a C program to insert an element at the begining of the Double linked list.

8. Write a C program to display the hash. table, which is to be prepared by using the Mid-square method.

9. Write a C program to demonstrate Binary search.

10. Write a C program to insert nodes into a Binary tree and to transverse in pre-order.

11. Write a C program to arrange a set of numbers in ascending order using QUICK-SORT.

12. Write a C program to arrange a set of numbers in descending order using EXCHANGE-SORT.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**I**
Subject	**Allied 1: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE**

Subject Description:
      This subject deals with mathematical concepts like Matrices, Numerical analysis and Statistical methods for computer science and applications.

Goal:
      To learn about the mathematical structures for computer based applications.

Objective:
      On successful completion of this subject the students should have:
- Understanding the concepts of mathematics
- Learning applications of statistical and numerical methods for Computer Science.

Unit I

      Matrices – Introduction – Determination – Inverse of a matrix – Rank of a Matrix - Eigen value Problems

Unit II

      System of Simultaneous Linear algebraic Equation – Gauss elimination, Gauss Jordon, Gauss Seidal methods. The solution of Numerical Algebraic & Transcendental equation – Bisection method – Newton – Rephson method – false position method.

Unit III

      Numerical Difference ion – Newton's forward Difference - Backward Difference – Startling formula Numerical Integration – Trapezoidal Rule & Simpson's rule Numerical solutions of ordering differential Equations – Taylor series & Runge kutta method

Unit IV

      Measures of central tendency – Mean Media and Mode – Relationship among mean media and mode. Measures of dispersion – Range, quartile deviation, mean deviation and Standard deviation

Unit V

      Regression and Correlation – Types of relationship – Linear regression – Correlation – Coefficient of correlation – Regression equation of variables – Discrete Probability distribution – Uniform, Binomial & possion Distribution

Text Book:
1. Engineering Mathematics Volume II – Dr M.K. Venkataraman - NPC
   (Unit I)
2. Numerical Methods in science & Engineering - M.K. Venkataraman – NPC , Revised Edition - 2005 (Unit II & III)
3. Business Statistics - S.P. Gupta & M.P. Gupta **Sultan Chand and Sons**
   (Unit IV & V)

Reference Book:
1. Numerical methods – E. Balagurusamy Tata MC Graw Hill.
2. Fundamental of Mathematical statistics S C Gupta, V. K. Kapoor **Sultan Chand and Sons**

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**II**
Subject	**CORE 3 : OBJECT ORIENTED PROGRAMMING WITH C++**

Subject Description:
        This subject deals with Object–oriented programming concepts using C++.
Goal:
        To learn about on Object–oriented Programming concept.
Objective:
        On successful completion of this subject the students should have:
-        Writing programming ability on OPPS concepts like Encapsulation, Abstraction, Inheritance, Polymorphism and Exception handling ect.,

UNIT-I
        Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures : - Decision Making and Statements : If .. else ,jump, goto, break, continue, Switch case statements - Loops in C++ : For,While, Do - Functions in C++ - Inline functions – Function Overloading.

 UNIT-II
        Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT-III
        Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT-IV
        Pointers: Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding , Polymorphism and Virtual Functions.

UNIT-V
        Files: File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .

TEXT BOOKS :
        Ashok N Kamthane: Object-Oriented Programming with ANSI and Turbo C++, Pearson Education publication. 2003.

REFERENCE BOOKS:
        E. Balagurusamy, Object-Oriented Programming with C++, Tata Mc-Grawhill Pupblication, 1998.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**II**
Subject	**CORE LAB 2 : PROGRAMMING IN C++ USING DATA STRUCTURES**

1. Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function POP( ) to delete an element. Check for overflow and underflow conditions.

2. Create a class ARITH which consists of a FLOAT and an integer Variable. Write member ADD(), SUB (), MUL (), DIV (), MOD () to perform addition, multiplication ,division and modulus Respectively. Write member functions to get and display values.

3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix. Overload the operators + ,-, * to add subtract and multiply two matrices. Write member functions to get and display MAT object values.

4. Create a class STRING. Write member function to initialize, get and display strings .Overload the operator + to concatenate two strings, = = to compare two strings and a member function to find the length of the string.

5. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic-salary, and grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da , hra , pf depending on the grade and Display the Payslip in a neat format using console I/O.

6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area( ) and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three classes SQUARE,RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result. .

7. Create two classes which consists of two private variables, one float And one integer variables in each class. Write member functions to get and display them. Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.

8. Write a user defined function USERFUN( ) which has the formatting commands like setw( ) , showpoint , showpos precision( ). Write a program which prints an multiplication table and uses USERFUN( ) for formatting.

9. Write a program to perform Insertion, Deletion and Updation using files.

10. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**II**
Subject	**Allied 2: COMPUTER ORIENTED NUMERICAL METHODS AND STATISTICS**

Subject Description: This subject deals with various numerical methods and statistical applications for computer science.

Goal: To learn about the computer based numerical and statistical methods.

Objective: On successful completion of this subject the students should have:
- Understanding various concepts of numerical analysis.
- Learning various applications statistical methods for Computer Science.

UNIT-I: The Solution of Numerical Algebraic & Transcendental Equations – Bisection method – Newton-Raphson method - The method of false position. The Solution of Simultaneous Linear Algebraic Equation – Gauss Elimination method – Gauss Jordon Elimination method – Gauss Seidal method of iteration – Gauss – Jacobi method

UNIT-II: Numerical Differentiation – Newton's Forward Difference formula - Newton's backward difference formula – numerical Integration – Trapezoidal rule - Simpson's One-third rule – Simpson's three-eighths rule.

UNIT-III: Interpolation – Newton forward interpolation formula – Newton backward interpolation formula – LaGrange's formula – Numerical solution of ordinary differential equations – Taylor method – Euler method – Range-Kutta method.

UNIT-IV: Measures of central tendency – Mean, Median and mode – Relation between mean, median and mode. Dispersion – Range – Mean deviation & standard deviation.

UNIT-V: Correlation – Karl Pearson`s Coefficient of Correlation – Rank correlation regression – Regression Equations- Difference between correlation & Regression

TEXT BOOKS:
1. **NUMERICAL METHODS – P. Kandasamy , K. Thilagavathi, K. Gunavathi.** S. Chand & company Ltd. New Delhi Revised Edition 2005 (UNIT I, II & III)
2. **STATISTICAL METHODS – R. S. N. Pillai, V. Bagavathi** Sultan Chand and Sons & Company Ltd. New Delhi. Reprint 2005. (UNIT IV & V)

REFERENCE BOOKS:
1. **COMPUTER ORIENTED NUMERICAL METHODS – V. Rajaraman**, PHI Pub.
2. **NUMERICAL METHODS – E. Balagurusamy** Tata McGraw Hill.
3. **FUNDAMENTAL OF MATHEMATICAL STATISTICS – S.C. Gupta, V. K. Kapoor**, S.Chand and Sons.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**III**
Subject	**CORE 5 : RDBMS AND ORACLE**

UNIT-I: Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization**: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Denormalization .

UNIT-II: Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT-III: Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. **Functions and Grouping**: Built-in functions –Grouping Data. **Multiple Tables: Joins and Set operations**: Join – Set operations.

UNIT-IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL**: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. **PL/SQL Cursors and Exceptions:** Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT-V: PL/SQL Composite Data Types: Records – Tables – Varrays. **Named Blocks**: Procedures – Functions – Packages –Triggers – Data Dictionary Views.

TEXTBOOKS:
    DATABASE SYSTEMS USING ORCLE – Nilesh Shah, 2nd edition, PHI.
        (UNIT-I: Chapters 1 & 2   UNIT-II: Chapters 3 & 4   UNIT III: Chapters 5 & 6
        UNIT-IV: Chapters 10 & 11 UNIT-V: Chapters 12, 13 & 14)

REFERENCE BOOKS:
    1. DATABASE MANAGEMNET SYSTEMS – Arun Majumdar, Pritimoy Bhattacharya, 2007, TMH.
    2. DATABASE MANAGEMETN SYSTEMS – Gerald V. Post, 3rd edition, TMH.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**III**
Subject	**CORE 6 : VISUAL PROGRAMMING (VISUAL BASIC)**

Subject Description: This Subject deals with the Visual Programming.
Goal: To learn about Visual Programming.
Objective: On Successful Completion of this subject the students should have:
-   Writing Programming ability on Visual Basic.

UNIT I:

Getting Started – Visual Basic Environment – Initial VB Screen – Single Document Interface – Tool Bars and System Control & Components – Use of File, Edit , View , Project , Format , Run and Debug , Tools , Window Menu , Properties Window , Procedures , Image Controls , Text Boxes , Labels , Navigating between Controls , Message Controls , Message Boxes and Grids.

UNIT II:

Steps in Programming – The Code Window – Editing Tools – Statements in VB – Assignment – and Property Setting – Variables , Numbers , Constants , Displaying Information – Controlling Program Flow – Repeating Operation – Making Decisions – GOTO – String Function – RND Functions – Data and Time Functions – Financial Functions.

UNIT III:

Control Arrays – Lists : One Dimensional Arrays – Array with More than One Dimension – Using Lists Functions and Procedures – Passing by Reference / Passing by Values – Code Module – Global Procedure and Global Variables – Documents for User Defined Types with Statements – Common Dialog Box – MDI Forms.

UNIT IV:

Fundamentals of Graphics and Files – Screen – The Line and Shapes – Graphics Via Codes , Lines & Boxes , Circle , Ellipse , Pie Charts Curves , Paint Picture Method – Graph Control – File Commands – File System Controls – Sequential Files – Random Access Files – Binary Files.

UNIT V:

Clip Board , DDE , OLE , Data Control – Programming with Data Control – Monitoring Changes to the Databases – SQL – Basics Database Objects.

TEXT BOOK :

Gary Comell – "Visual Basic 6.0 Programming"– Tata McGraw Hill Edition.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**III**
Subject	**CORE LAB 3 :VISUAL PROGRAMMING LAB – VB WITH MS ACCESS**

1. Develop a VB Project to Check User Name & Password Given by User.

2. Develop a VB Project to Add & Remove Items From List Box.

3. Develop a VB Project to Copy all Items in a List Box to Combo Box.

4. Develop a VB Project to Enter and Display Student Information.

5. Develop a VB Project to Scroll Text from Left to Right Using Timer.

6. Develop a VB Project to Mini Calculator Functions.

7. Develop a VB Project to Documents typing using MDI Form.

Use Employee Information For the Following Projects.

8. Develop a VB Project to Search a Record in MS-ACCESS database using data control.

9. Develop a VB Project to Delete a Record from MS-ACCESS database using data control.

10. Develop a VB Project to Perform following Operations in MS-ACCESS database using DAO.

    A). Move First Record. B).Move Next Record C).Move Previous Record. D).Move Last Record.

11. Develop a VB Project to Insert a Record in MS-ACCESS database using ADO.

12. Develop a VB Project to Modify a record in MS-ACCESS database using ADO.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**III**
Subject	**ALLIED 3 : MICROPROCESSORS AND ALP**

UNIT I

Introduction to microprocessors: Evolution of microprocessors -Single-chip Microcomputer - Embedded Microprocessors -Bit- Slice processors -Microprogramming -RISC and CISC Processors - Scalar and Superscalar Processors -Vector Processors -Array Processors -Symbolic Processors –Digital Signal Processors.

Intel 8086 -Pin Description of Intel 8086 -Operating modes of 8086 -Register organization of 8086 -BIU and EU -Interrupts -8086 based computer system -Addressing Modes of 8086.

UNIT II

8086 Instruction Set -Instruction Groups -Addressing Mode Byte -Segment Register Selection - Segment Override -8086 Instructions.

Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array - Numbers in Ascending and Descending order -Block Move or Relocation -Block Move using REP instruction -Sum of a series -Multibyte Addition.

UNIT III

Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor -486DX Architecture- Register Organization of 486 Microprocessor -Memory Organization -Operating Modes of Intel 486 - Virtual Memory -Memory Managament Unit -Gates -Interrupts and Exceptions -Addressing Modes of80486 -Pin Configuration.

UNIT IV

Input devices -Output devices -Memory and VO addressing -8086 Addressing and Address Decoding -Programmable VO Ports -DMA Data Transfer.

Other Microprocessors -PowerPC Microprocessors -Pentium Microprocessors -Pentium Pro microprocessor -Alpha Microprocessor -Cyrix Microprocessor -MIPS Microprocessor –AMD Microprocessor .

UNIT V

MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040

Interfacing of AID Converter and Applications: Introduction -Interfacing of ADC 0808 or ADC 0809 to Intel 8086 -Bipolar to Unipolar Converter -Sample and Hold Circuit, LF 398 -Microprocessor based Measurement and Control of Physical Quantities.

TEXT BOOK

Badri Ram, "Advanced Microprocessors and Interfacing", Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint, 2007.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**III**
Subject	**DIPLOMA 1 : DATA COMMUNICATION AND NETWORKS**

UNIT- I

Introduction to communications and Networking : Introduction – Fundamental concepts - Data communications – Protocols- standards - Standards organizations - Signal propagations- Analog and Digital signals- Bandwidth of a signal and a medium - Fourier analysis and the concept of bandwidth of a signal - The data transmission rate and the bandwidth.

Information encoding: Introduction – Representing different symbols- Minimizing errors- Multimedia – Multimedia and Data compression.

UNIT- II

Analog and digital transmission methods: Introduction - Analog signal, Analog transmission - Digital signal, Digital transmission - Digital signal , Analog transmission - Baud rate and bits per second - Analog signal, Digital (Storage and) transmission - Nyquist Theorem.

Modes of data transmission and Multiplexing: Introduction – Parallel and Serial communication - Asynchronous, Synchronous and Isochronous communication - Simplex, Half-duplex and Full-duplex communication – Multiplexing - Types of Multiplexing - FDM versus TDM.

Transmission Errors: Detection and   correction : Introduction – Error classification – Types of Errors – Error detection.

UNIT- III

Transmission media: Introduction - Guided media - Un Guided media - Shannon capacity.

Network topologies, switching and routing algorithms: Introduction - Mesh topology - Star topology - Tree topology - Ring topology - Bus topology - Hybrid topology - Switching basics- Circuit switching – Packet switching - Message switching - Router and Routing – Factors affecting routing algorithms - Routing algorithm -Approaches to routing.

UNIT- IV

Networking   protocols and OSI model: Introduction – Protocols in computer communications - The OSI model - OSI layer functions.

Integrated services digital networking (ISDN): Introduction – Background of ISDN - ISDN architecture – ISDN interfaces - Functional grouping – Reference points - ISDN protocol architecture - Broadband ISDN (B-ISDN).

UNIT- V

Asynchronous transfer mode (ATM): Introduction- Overview of ATM – Packet size – Virtual circuits in ATM – ATM cells – Switching – ATM layers – Miscellaneous Topics.

Text book:

Data Communications and Networks, ACHYUT. S. GODBOLE, Tata McGraw-Hill Publishing Company, 2007.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**IV**
Subject	**CORE 7: JAVA PROGRAMMING**

Subject Description:

This Subject deals with the JAVA Programming.

Goal:

To learn about Java.

Objective:

On Successful Completion of this subject the students should have:
- Writing Programming ability on Java like Encapsulation, Data Abstraction, Inheritance, Polymorphism and Exception handling, Applet etc.

UNIT I:

Basic Concepts of Object –Oriented Programming: Objects and Classes – Data Abstraction and Encapsulation – Inheritance – Polymorphism – Dynamic Binding – Message Communication – Benefits of Oops – History of Java.

UNIT II:

Features of Java – Differences between C , C++ and Java – Data Types of Java – Variables – Declaration of Variables – Operators in Java – Decision Making and Branching – Decision Making and Looping –Methods.

UNIT III:

Class Defining – Creating Objects – Constructors – Method Overloading – Method Overriding – Final Classes – Abstract Method and Classes. Arrays - Creating any array – Declaration of Array – Creation of Array – Initialization of Arrays – Array Length – 2 Dimensional Arrays – Strings – String Arrays – String Methods – String Buffer Class.

UNIT IV:

Creating Threads – Extending the Thread class – Lifecycle of thread – Exception – Exception Handling – Multiple Catch Statements Throwing our own exceptions – Using Exceptions for Debugging.

UNIT V:

Introduction to Applets : How to Write Applets – Building Applet Code – Applet Life Cycle – Applet Tag – Running the Applet – Concepts of Streams – Stream Classes – Byte Stream class – Character Stream Class – Using Streams.

TEXT BOOK:

E. BALAGURUSAMY – "Programming With JAVA a Primer", 3rd Edition TMH.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**IV**
Subject	**CORE 8: CLIENT / SERVER COMPUTING**

Subject Description:
        This Subject deals with the C/S Computing
Goal:
        To learn about C/S Computing
Objective:
        On Successful Completion of this subject the students should have:
                - C/S Applications , GUI ETC.,

UNIT I:

        Introduction to Client/Server Computing – What is Client/Server Computing – Benefits of Client/Server Computing – Evolution of C/S Computing – Hardware Trends – Software Trends-Evolution of Operating Systems – N/w Trends – Business Considerations..

UNIT II:

        Overview of C/S Applications: Components of C/S Applications – Classes of C/S Applications – Categories of C/S Applications . Understanding C/S Computing : Dispelling the Myths – Obstacies – Upfront & Hidden – Open Systems & Standards – Standards – Setting Organizations – Factors of Success .

UNIT III:

        The Client Hardware & Software : Client Component – Client Operating Systems – What is GUI – Database Access – Client Software Products : GUI Environments – Converting 3270/5250 Screens – Database Tools – Client Requirements : GUI Design Standards – Open GUI Standards – Interface Independence – Testing Interfaces .

UNIT IV:

        The Server : Categories of Servers – Features of Server Machines – Classes of Server Machines – Server Environment : N/W Management Environment – N/W Computing Environment – Extensions – Network Operating System – Loadable Module..

UNIT V:

        Server Operating System : OS/2 2.0 – Windows New Technology – Unix Based OS – Server Requirements : Platform Independence – Transaction Processing – Connectivity – Intelligent Database – Stored Procedure – Triggers – Load Leveling – Optimizer – Testing and Diagnostic Tools – Backup & Recovery Mechanisms..

TEXT BOOK:

        Dawna Travis Dewire –"Client / Server Computing " – Tata McGraw Hill.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**IV**
Subject	**CORE LAB 4: PROGRAMMING LAB - JAVA**

1. Create an Employee Package to Maintain the Information about the Employee. Use Constructors to Initialize the Employee Number and Use Overloading Method to set the Basic Pay of the Employee. By Using this Package Create a Java Program.

2. Program to Implement Polymorphism, Inheritance and Inner Classes.

3. Java Program to Handle Different Mouse Events.

4. Create an Applet for a Calculator Application.

5. Java Program to Maintain the Student Information

6. Animate Images at Different Intervals by using Multithreading Concepts.

7. Program to send a text message to another System and receive the text message from the System.

8. Java Program by using JDBC Concepts to Access a Database.

9. Java Program to Implement RMI.

10. Java Program by using to implement the Tree Viewer.

11. Java Bean Program to view an Image.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**IV**
Subject	**ALLIED 4: COMPUTER INSTALLATION AND SERVICING**

Unit – I
PC SYSTEM
      Personal Computer System - Functional Blocks - System Unit - Display Unit - Keyboard.
INSIDE PC
      Motherboard - BIOS - CMOS-RAM - Motherboard types – Processors – Chipsets – USB.
ON-BOARD MEMORY
      PC's Memory Organization - Memory packaging - I/O Ports - USB Port.

Unit – II
      Floppy Disk Drive and Controller - Hard Disk Drive and Controller, MMX – Multimedia Extensions.

Unit – III
      Input Devices - Monitors and Display Adapters.

Unit – IV
Output Devices
      DOT Matrix Printer - Printer Controller - Laser Printer - Inkjet Printer.

Computer Installation
      Power supply - PC Installation.

Unit – V
Trouble shooting and servicing
      POST, Trouble shooting the mother board - Trouble shooting the Keyboard - Trouble shooting the disk devices - Trouble shooting the printer.

Maintenance
      Diagnostic Software's - Data Security.

Computers and Communication
      Networking – Modem - Internet.

Text Book:
      Computer Installation and Servicing, Second Edition by D.Balasubramaniam, Tata McGraw-Hill, 2005.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**IV**
Subject	**DIPLOMA 2 (LAB): NETWORK LAB**

1. Write a program to Detect Errors using Vertical Redundancy Check (VRC).

2. Write a program to Detect Errors using Longitudinal Redundancy Check (LRC).

3. Write a program to Detect Errors using Cyclic Redundancy Check (CRC).

4. Write a Socket program to implement Asynchronous Communication.

5. Write a Socket program to implement Isochronous Communication.

6. Write a program to implement Stop & Wait Protocol.

7. Write a program to implement Sliding Window Protocol.

8. Write a program to implement the Shortest Path Routing using Dijkstra algorithm.

9. Write a Socket Program to Perform file transfer from Server to the Client.

10. Write a Program to implement Remote Procedure call under Client / Server Environment

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**CORE 9: MOBILE COMPUTING**

UNIT I

INTRODUCTION – Mobility of Bits and Bytes – Wireless-the beginning – Mobile computing – Dialog control – Networks – Middle ware and gateways – Application and Services – Developing Mobile computing applications – Security in Mobile computing – Standards – Why is it necessary? – Standard bodies – Players in the wireless space.

MOBILE COMPUTING ARCHITECTURE – History of computers – History of internet – Internet-the Ubiquitous Network – Architecture for mobile computing – Three-Tire architecture – Design considerations for mobile computing – Mobile computing through Internet – Making Existing applications Mobile-emabled.

UNIT II

MOBILE COMPUTING THROUGH TELEPHONY – Evolution of telephony – Multiple access procedures – Mobile computing through telephone – Developing an IVR application – Voice XML – Telephony applications programming interface(TAPI)

EMERGING TECHNOLOGIES – Introduction – Bluetooth – Radio Frequency Indentification (RFID) – Wireless Broadband (WiMAX) – Mobile IP – Internet Protocol Version 6 (IPv6) – Java card.

UNIT III

GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM) – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Address and Identifiers – Network aspects in GSM – GSM frequency allocation – Authentications and Security.

SHORT MESSAGE SERVICES (SMS) – Mobile computing over SMS – Short Message Services (SMS) – Value added services through SMS – Accessing SMS bearer.

UNIT IV

GENERAL PACKET RADIO SERVICE (GPRS) – GPRS and Packet data network – GPRS Network architecture – GPRS Network operations – Data services in GPRS – Applications for GPRS – Limitations of GPRS – Billing and charging in GPRS.

WIRELESS APPLICATION PROTOCOL (WAP) – WAP – MMS – GPRS applications.

UNIT V

CDMA and 3G – Spread Spectrum technology – Is-95 – CDMA Vs GSM – Wireless data – 3rd Generation networks – Applications on 3G.

WIRELESS LAN – Advantages – IEEE 802.11 Standards – Wireless LAN architecture – Mobility in Wireless LAN – Deploying Wireless LAN – Mobile ADHOC networks and Sensor networks – Wireless LAN Security – WiFi Vs 3G.

TEXT BOOK:

1. "MOBILE COMPUTING" - Ashoke K Talukder, Roopa R Yavagal – TATA McGRAW HILL – 2005 – Fourth Reprint 2007.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**CORE 10: OPERATING SYSTEMS**

Subject Description:
　　　This Subject deals with the Operating System.
Goal:
　　　To learn about Operating System
Objective:
　　　On Successful Completion of this subject the students should have:
　　　- OS Concepts, Process, Files, Dead Lock Etc.,

UNIT I:
　　　History of Operating System - Operating system concepts – Process – Files -System calls The Shell - Operating System Structure - Monolithic Systems – Virtual Machines-Client Server model.

UNIT II:
　　　Introduction to Process-Implementation of Process-Process States- Inter Process Communication-Race Condition - Critical Region - Mutual Exclusion - Sleep & Wakeup - Process Scheduling - Shortest job First-Two Level Scheduling

UNIT III:
　　　Files – Structures – Type – Operations - Shared Files - Disk Space Management -The Security Environment - Generic Security Attacks - Design Principles for Security-User Authentication - Deadlocks - Deadlock Detection & Avoidance - Deadlock Prevention

UNIT IV:
　　　Memory Management: Swapping - Virtual Memory - Memory Management without Swapping – Segmentation - Using MS DOS - MS DOS shell – MS DOS File System.

UNIT V:
　　　UNIX: UNIX Goals- Interface to Unix-Process in Unix- UNIX files system- Memory Management System Calls in UNIX.

TEXT BOOK:
　　　Andrew S. Tanenbaum   - "Modern Operating System" -Eastern Economy Edition –PHI

REFERENCE BOOK:
　　　1. D.M.Dhamdhere – "Operating Systems–A Concept Based Approach" 2nd edition TMH.
　　　2. Milan Milenkovic-"Operating System" 2nd edition TMH.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**CORE 11: SOFTWARE ENGINEERING**

Subject Description:
This Subject deals with the Soft Ware Engineering
Goal:
To learn about Software Engineering
Objective:
On Successful Completion of this subject the students should have:
- Design Process, Analysis Concepts, User Interface Design.

UNIT I:

The Evolving role of software – Software – Software Crises & Myths – Software Engineering : Layered Technology – The Software Process Model – Evaluating Software Process Models – Components Based Development – The Formal Methods Model – 4GT – Software Scope – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models.

UNIT II:

Analysis Concepts & Principles: Requirement Analysis – Analysis Principles – Software Prototyping – Specification. Analysis Modeling: Data Modeling – Functional Modeling & Information Flow – Behavioral Modeling.

UNIT III:

Design Concepts & Principles: The Design Process – Design Principles – Design Concepts – Effective Modular Design.

UNIT IV:

User Interface Design: The Golden Rules – UID – Task analyzing and modeling – Interface Design Activities – Implementation Tools – Design Evaluation.

UNIT V:

Component Level Design: Structured Programming – Comparison of Design Notations. Object oriented design: Design for Object Oriented Systems – the System design process – The Object Design Process.

TEXT BOOK:

Roger S Pressman – "Software Engineering a Practioner's Approach" 5th Edition, TMH.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**AOS 1: GRAPHICS AND MULTIMEDIA**

(GRAPHICS – UNITS I & II)
UNIT-I: Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

UNIT-II: 2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations.

(MULTIMEDIA – UNITS III, IV &V)
UNIT-III: Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. **Image:** Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT-IV: Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT-V: Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software. **Animation:** Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. **Compression:** MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXTBOOKS:
　　1. **COMPUTER GRAPHICS – Donald Hearn, M.Pauline Baker**, 2nd edition, PHI.
　　　　(UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)
　　2. **PRINCIPLES OF MULTIMEDIA – Ranjan Parekh**, 2007, TMH.
　　　　(UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV: 7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28
　　　　UNIT-V: 9.5-9.10,9.13,9.15,10.10-10.13)

REFERENCE BOOKS:
　　1. COMPUTER GRAPHICS – Amarendra N Sinha, Arun D Udai, TMH.
　　2. MULTIMEDIA: Making it Work – Tay Vaughan, 7th edition, TMH.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**CORE LAB 5: MULTIMEDIA LAB**

Using suitable Multimedia software/tool (Flash/Photoshop/Macromedia) do the following :

1. Create a Sun Flower.

2. Create Water Drops.

3. Animate Plane Flying in the Clouds.

4. Create Plastic Surgery for Nose.

5. Create Mouse.

6. Create See thru text.

7. Create Military Clothe.

8. Create Stone Texture.

9. Create Rollover Buttons.

10. Create Realistic Stone Structure.

11. Create Web Page.

12. Convert Black and White to Color Photo.

13. Create Ice Text.

14. Create Realistic Blood Structure.

15. Create Fog Effects.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**V**
Subject	**DIPLOMA 3: NETWORK SECURITY AND MANAGEMENT**

UNIT I

Introduction: Why Network Security is needed – Management principles – Security principles - Network management - Security attacks – Qualities of a Good Network.

Organizational Policy and Security: Security policies, Standards and Guidelines – Information Policy – Security Policy - Physical Security – Social Engineering – Security Procedures – Building a Security Plan.

Security Infrastructure: Infrastructure Components – Goals of Security Infrastructure – Design Guidelines – Security Models.

UNIT II

Cryptography: Terminology and background – Data Encryption Methods – Cryptographic Algorithms- Secret Key Cryptography - Public key cryptography – Message Digest – Security Mechanisms – Speech Cryptography.

Hardware and Software Security: Hardware security – Smart Card – Biometrics – Virtual Private Networks (VPNs) - Trusted Operating Systems – Pretty Good Privacy (PGP) – Security Protocols.

Database Security: Introduction to Database – Characteristics of a Database Approach – Database Security Issues - Database Security – Vendor-Specific Security – Data Warehouse Control and Security.

UNIT III

Intrusion Detection Systems: What is not ad IDS – Infrastructure of IDS – Classification of Intrusion Detection Systems – Host-Based IDS – Network-Based IDS - Anomaly Vs Signature Detection – Manage an IDS – Intrusion Detection Tools – IDS Products and Vendors.

Network Security: Fundamental Concepts – Identification and Authentication – Access Control – A Model for Network Security – Malicious Software – Firewalls.

UNIT IV

Network Management: Goal of Network Management – Network Management Standards – Network Management Model – Infrastructure for Network Management - Simple Network Management Protocol (SNMP).

Security Management: Security Plan - Security Analysis - Change Management - Disaster Recovery - Systems Security Management - Protecting Storage Media- Protection of System Documentation -Exchanges of Information and Software – Security Requirements of Systems.

UNIT V

Electronic Mail Policy: Electronic Mail – What are the E-mail threats that organization's face - Why do you need an E-mail Policy - How do you create an E-mail Policy - Publishing the E-mail Policy - University E-mail Policy.

Security of Internet Banking Systems: Introduction Banking System – Security Problem – Methodology for Security Problem – Schematic flow of Internet Banking – A layered approach to security.

Text Books:

Network Security and Management, Brijendra singh, PHI 2007.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**CORE 12: COMPUTER AIDED DESIGN AND MANUFACTURING**

UNIT – I:

Introduction: CAD/ CAM Defined – The Product Cycle and CAD/CAM – Automation and CAD/CAM – Organization.

Fundamentals of CAD: Introduction – The Design Process – The Application of Computers for Design – Creating the Manufacturing Data Base – Benefits of Computer-Aided Design.

UNIT –II:

Hardware in Computer-Aided Design: Introduction - The Design Workstation - The Graphics terminal - Operator input Devices- Plotters and Other Output Devices - The Central Processing Unit - Secondary Storage.

Conventional Numerical Control: Introduction – Basic Components of an NC System – The NC Procedure – NC Coordinate System – NC Motion Control Systems – Applications of Numerical Control – Economics of Numerical Control.

UNIT – III:

Robot Technology: Introduction – Robot Physical Configurations – Basic Robot Motions – Other Technical Features – Programming the Robot – Robot Programming Languages – End Effectors – Work Cell Control and Interlocks – Robotic Sensors.

Robot Applications: General Considerations in Robot Applications – Material Transfer – Machine Loading - Welding - Spray Coating - Processing Operations - Assembly - Inspection.

UNIT – IV:

Group Technology: Introduction – Part Families – Part Classification and Coding **-** Three Parts Classification and Coding Systems – Group Technology Machine Cells – Benefits of group Technology.

Computer-Aided Process Planning: The Planning Function – Retrieval-Type Process Planning Systems – Generative Process Planning Systems – Benefits of CAPP – Machinability Data Systems – Computer-Generated Time Standards.

UNIT – V:

Production Planning and Control:

Introduction – Traditional Production Planning and Control – Problems with Traditional Production Planning and Control – Computer-Integrated Production Management System – Cost Planning and Control.

Inventory Management and MRP: Introduction – Inventory Management – Material Requirements Planning – Basic MRP Concepts – Inputs to MRP – How MRP works – MRP Output Reports – Benefit Of MRP –   MRP II:Manufacturing Resource Planning.

Text Books:

**CAD/CAM	Computer-Aided	Design	and	Manufacturing,	Mikell.P.Groover	and Emory.W.Zimmers, Jr., Pearson Edition, 2003.**

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**CORE 13: WEB TECHNOLOGY**

Unit I

HTML: Introduction – HTML Elements – HTML syntax – Document types – html, head, title and body elements – Block level elements – Text level elements – Links – Images – Fonts – Colors – Style Sheets – Character Entities.

Unit II

Active Server Pages: Introduction – ASP Objects: The Request Object – The Response Object – The Server Object – Using the Request, Response and Server Objects.

Unit III

ASP Objects: global.asa file – The Application Object – The Session Object – Using Application and Session Objects.

Unit IV

ASP Components : The Ad Rotator Component – The Browser Capabilities Component – The Content Linking Component – The Content Rotator Component – The Counters Component – The Page Counter Component –The Permission Checker component.

Unit V

Database Connectivity in ASP: AxtiveX Data Objects – The Connection Object – The Command Object - The Recordset Object – The Record Object – The Stream Object.

Text Books:

1. ASP 3.0: A Beginners Guide, Dave Mercer, Tata McGraw Hill, 2001.
2. HTML Programmer's Reference, Thomas A. Powell, Dan Whitworth, Tata McGraw Hill, 2001.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**CORE 14: DATA MINING**

Subject Description:

This Subject deals with the Data Mining

Goal:

To learn about Data Mining

Objective:

On Successful Completion of this subject the students should have:

- Matrices, Decision tree, Neural Network, Algorithms etc.,

UNIT I:

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT II:

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT III:

Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT IV:

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms. Partitional Algorithms.

UNIT V:

Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

TEXT BOOK:

Margaret H.Dunbam – "Data Mining Introductory and Advanced Topics" Pearson Education – 2003.

REFERENCE BOOK:

Jiawei Han & Micheline Kamber – "Data Mining Concepts & Techniques" 2001 Academic Press.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**AOS 2: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS**

Subject Description:

This Subject deals with the Artificial Intelligence

Goal:

To learn about AI

Objective:

On Successful Completion of this subject the students should have:

- Heuristic, Hill Climbing, Planning, Expert System etc.,

UNIT I:

The AI Problems – AI technique – Criteria for success – Define the Problem as a state space search – Production System – Characteristics – Problem Characteristics.

UNIT II:

Heuristic Search Techniques: Generate and Test – Hill climbing –Best First Search – Problem Reduction – Constraints Satisfactions – Means End Analysis.

UNIT III:

Knowledge Representation Issues: Approaches to knowledge Representation – The Frame Problem – Computable Functions & Predicates – Resolution – Procedural versus Declarative Knowledge.

UNIT IV:

Logic Programming – Backward Versus Forward Reasoning – Matching – Control Knowledge. Planning: Overview – Components of Planning System – Gal stal Planning – Hierarchical Planning – Reactive Systems.

UNIT V:

Expert Systems: Representing & Using Domain Knowledge – Expert System Shells - Explanation – Knowledge Requisition .

TEXT BOOK:

Elaine Rich and Kevin Knight – "Artificial Intelligence " Tata Mcgraw Hill 2nd edition 1991.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**CORE LAB 6: WEB TECHNOLOGY**

1. Design a personal web page using HTML.

2. Design a data entry form in HTML.

3. Write a Program in ASP to get data using a form, validate the data and returns the same data for correction if any using the same form.

4. Write a program in ASP to display the Session properties.

5. Write a program in ASP that makes use of Ad Rotator component.

6. Write a program in ASP that makes use of Browser Capabilities component.

7. Write a program in ASP that makes use of Content Rotator component.

8. Write a program in ASP that makes use of page counter component.

9. Write a program in ASP to get the data of students using forms and stores them in database.

10. Write a program in ASP to perform record navigation using a form.

Course	**B.Sc.(COMPUTER TECHNOLOGY) (Regular)**
Effective from	**2007-2008 and Onwards**
Semester	**VI**
Subject	**DIPLOMA 4 (LAB): NETWORK SECURITY**

1. Write a program to encrypt the data using the encryption methods:

   (i) Substitution Ciphers
   (ii) Transposition Ciphers

2. Write a program to implement DES algorithm.

3. Write a program to implement the Public Key Cryptography using Diffie -Hellman Algorithm.

4. Write a program to implement the Public Key Cryptography using RSA algorithm.

5. Write a program to secure the Database using User Authentication Security.

6. Write a server security program for Dynamic Page Generation.