REGULATIONS FOR B.Sc. COMPUTER SCIENCE 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 SCIENCE 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 SCIENCE 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 SCIENCE & COMPULSORY DIPLOMA IN SOFTWARE TESTING
## SCHEME OF EXAMINATION FROM THE ACADEMIC YEAR 2007-08

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Ins. Hrs/Wk</th>
<th>Dur Max Marks</th>
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<tbody>
<tr>
<td><strong>Semester I</strong></td>
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</tr>
<tr>
<td>1. Part-I: Language-I</td>
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<td>2. Part-II: English-I</td>
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<tr>
<td>3. Core 1: Cobol Programming</td>
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<tr>
<td>4. Core 2: Digital Fundamentals and Architecture</td>
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<td>5. Core Lab 1: Programming Lab - Cobol</td>
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<tr>
<td>6. Allied 1: Mathematical Structures for Computer Science</td>
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<tr>
<td>7. Foundation Course-A (General Awareness)</td>
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<tr>
<td><strong>Semester II</strong></td>
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<tr>
<td>1. Part-I: Language-II</td>
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<tr>
<td>2. Part-II: English-II</td>
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<td>3. Core 3: Data Structures and C Programming</td>
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<td>4. Core Lab 2: Programming Lab – C (Data Structures)</td>
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<td>5. Allied 2: Discrete Mathematics</td>
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<td>6. Foundation Course-A (General Awareness)</td>
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<td><strong>Semester III</strong></td>
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<tr>
<td>1. Core 4: Communication Skills</td>
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<td>2. Core 5: System Software and Operating System</td>
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<td>3. Core 6: C++ Programming</td>
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<td>4. Core Lab 3: Programming Lab - C++</td>
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<td>5. Allied 3: Operation Research</td>
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<tr>
<td>6. Foundation Course-B (Environment Studies)</td>
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<tr>
<td>7. Diploma 1: Software Engineering</td>
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<tr>
<td><strong>Semester IV</strong></td>
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<tr>
<td>1. Core 7: Computer Networks</td>
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<td>2. Core 8: Graphics and Multimedia</td>
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<td>4. Allied 4: Business Accounting</td>
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<td>5. Foundation Course-B (Environment Studies)</td>
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<tr>
<td>6. Diploma 2: Software Testing</td>
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<tr>
<td><strong>Semester V</strong></td>
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<tr>
<td>1. Core 9: Rdbms &amp; Oracle</td>
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<td>2. Core 10: Visual Programming - Visual Basic</td>
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<td>3. Core 11: Artificial Intelligence and Expert Systems</td>
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<td>4. AOS1: Client/Server Computing</td>
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<td>5. Core Lab 5: Programming Lab - VB &amp; Oracle</td>
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<td>6. Diploma 3: Software Project Management</td>
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<td><strong>Semester VI</strong></td>
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<td>1. Core 12: Network Security and Cryptography</td>
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<td>2. Core 13: Web Technology</td>
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<tr>
<td>3. Core 14: Java Programming</td>
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<tr>
<td>4. AOS 2: Data Mining</td>
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<tr>
<td>5. Core Lab 6: Programming Lab - Java</td>
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<tr>
<td>6. Diploma 4 (Lab): Software Testing Lab</td>
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<table>
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<th>Total Marks</th>
<th>B.Sc. (CS) Course</th>
<th>Diploma Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3200</td>
<td>400</td>
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CORE 1 : COBOL PROGRAMMING

Subject Description:
This subject deals with the programming concepts on business applications using COBOL language.

Goal: To learn about COBOL programming language for business problems

Objective:
On successful completion of this subject the students should have:
- Writing programs for business applications
- Concepts of file handling in programming languages

Unit I

Unit II

Unit III
Conditional Statements: If Statement – Nested if statement – Sign Condition – Class Condition- Condition Name – Compound Condition- PERFORM Statements, More about DATA Division: RENAMES-REDEFINES – Simple Programs Using the above Verbs.

Unit IV

Unit V

Text Books:

Reference Books:
1. COBOL programming – V. Rajaraman, PHI Pub.
2. Introduction To Cobol Programming – Author Dr. R. Krishnamoorthy, JJ Publications.
CORE 2 : DIGITAL FUNDAMENTALS 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
- Microprocessor architecture
- 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.

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.

Unit III

Unit IV

Unit V

Text Books:

Reference Books:
2. Computer Architecture, Carter, Schaums outline series, TMH.
CORE LAB -1 : PROGRAMMING LAB - COBOL

1. Write a COBOL program to find the sum of individual digits of a 10-digit number until a single digit is produced.
2. Write a COBOL program to accept the inputs student Name, Marks for five subjects and declare the result as PASS, if the student gets minimum 40 in each subject otherwise declare the result as FAIL.
3. Write a COBOL program to accept the given date (DDMMYY) and display the result in the following specified format:
   For eg : 030498 \(\rightarrow\) 3rd APR 1998 [Use REDEFINES Clause].
4. Write a COBOL program to display the given three digit number into words using OCCURS clause
   For eg : 342 \(\rightarrow\) THREE HUNDRED AND FORTY TWO
5. Write a COBOL program to create a student data file using the following fields:
   ROLL-NO, NAME, AGE, SEX, YEAR-IN-COLLEGE, MARKS for five subjects
6. Write a COBOL program to create the following two files using the student data file (created by program 5):
   FILE 1: List of male student who are studying third year of the College.
   FILE 2: List of female students who are studying first year of the College.
   [Use MOVE…….CORRESPONDING Option]
7. Write a COBOL program to sort the student data file (crated by program 5) in the ascending order of the fields SEX, Year-in-college and ROLL-NO.
   [Use SORT Verb].
8. Write a COBOL program to create an indexed sequential file for the employees of an organization using the following fields :
   EMP-NO, NAME, DOB, SEX, BASIC-PAY, DESIGNATION.
9. Write a COBOL program to update the new BASIC-PAY of each employee in the Employee data file (crated in program 8) by incrementing 25% of BASIC-PAY.
10. Write a COBOL program to find the number of male employees whose BASIC-PAY > 4000 and the number of female employees whose BASIC-PAY < 3000 using the employee data file (created by program 8)
11. Write a COBOL program to crate an inventory data file by using the following fields :
    ITEM-CODE, DESCRIPTION, OPEN-STOCK, PURCHASES, SALES, SAFETY-LEVEL, CLOSE-STOCK.
12. Write a COBOL program to prepare RE-ORDER LEVEL STATEMENT by using the inventory data file (crated by program 11) if the CLOSE-STOCK is less than SAFETY-LEVEL :
    A.B.C & COMPANY, CHENNAI-600006
    RE-ORDER LEVEL STATEMENT

<table>
<thead>
<tr>
<th>ITEM-CODE</th>
<th>DESCRIPTION</th>
<th>SAFETY-LEVEL</th>
<th>CLOSE-STOCK</th>
</tr>
</thead>
</table>
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:
1. Understanding the concepts of mathematics
2. Learning applications of statistical and numerical methods for Computer Science.

Unit I

Unit II

Unit III

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

Unit V

Text Book:
1. Engineering Mathematics Volume II – Dr M.K. Venkataraman - NPC (Unit I)
3. Business Statistics - S.P. Gupta & M.P. Gupta Sultan Chand and Sons (Unit IV & V)

Reference Book:
2. Fundamental of Mathematical statistics S C Gupta, V. K. Kapoor Sultan Chand and Sons
CORE 3: 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:

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:

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:

REFERENCE BOOK:
3. Data structure using C – Aaron M Tanenbaum, Yedidyeh langsam, Moshe J Augenstein, PHI Pub
CORE LAB-2: PROGRAMMING LAB – C (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 driven program to implement QUEUE to perform the following:
   (i) Insertion
   (ii) Deletion
   (iii) Modification
   (iv) Listing of elements using points

4. Write a C program to create LINKED LIST representation of employee records and do the following operations using pointers:
   a. To add a new record
   b. To delete an existing record
   c. To print the information about an employee
   d. 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 beginning 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 traverse 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.
ALLIED 2: DISCRETE MATHEMATICS

Subject Description:
This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

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

Objective:
On successful completion of this subject the students should have:
- Understanding the concepts of discrete mathematics
- Learning applications of discrete structures in Computer Science.

Unit I

Unit II

Unit III
Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

Unit IV

Unit V

Text Books:
   (UNIT I TO V)

Reference Books:
CORE-5: SYSTEM SOFTWARE AND OPERATING SYSTEM

Subject Description: It deals Fundamentals of System Software and Resources of Operating System.
Goal: Knowledge on various System Software and Operating System concepts.
Objective: Enable the student to get sufficient knowledge on various system resources.


UNIT- II: Macroprocessor: Basic macroprocessor functions - Machine independent macroprocessor features - concatenation of macro parameter macro processor design options-recursive macro expansion - general purpose macro processor - macro processing within language translators. Text Editors: Overview of editing process - user interface - editor structure.


TEXT BOOK:

REFERENCE BOOKS :
CORE 6 : C++ PROGRAMMING

Subject Description: This subject deals with Object–oriented programming concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.

Goal: Knowledge on Object–oriented concept and programming with C++.

Objective: To inculcate knowledge on Object-oriented programming concepts using C++.

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

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:

TEXT BOOKS:

REFERENCE BOOKS:
CORE LAB - 3 : PROGRAMMING LAB – C++

1. Write a C++ Program to create a class to implement the Data Structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions.

2. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write a Member function ADD(), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.

3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.

4. Write a C++ Program to create a class FLOOR that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOOR.

5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the Operator “+” to Concatenate two Strings, “==” to Compare two strings.

6. Write a C++ Program to create class which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.

7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.

8. Write a C++ Program to create two classes each class consists of two private variables, an integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.

9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.

11. Write a C++ Program to create a File and to display the contents of that file with line numbers.

12. Write a C++ Program to merge two files into a single file.
ALLIED-3: OPERATION RESEARCH

Subject Description:
This subject deals with various optimization techniques for linear programming, Transportation and assignment problems, Game theory, PERT and CPM.

Goal:
To learn about the managerial concepts like decision making, optimization etc.

Objective:
On successful completion of this subject the students should have:
- Understanding various mathematical applications in industries.
- Decision making for real time environment.

UNIT I

UNIT II
Transportation and assignment problem - Integer Programming Branch and Round Techniques - Assignment and Traveling Salesman Problem.

UNIT III
Game Theory - Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - n x 2 - 2 x m games. Replacement models - Elementary replacement models - present value - rate of return - depreciation - Individual replacement – Group replacement.

UNIT IV (Derivations not included)
Queuing Theory - definition of waiting line model - Queue discipline - traffic intensity - poison arrival – Birth death process - Problem from single server: finite and infinite population model – Problems from multi server: finite and infinite population model.

UNIT V
PERT & CPM - Network representation - backward pass - Forward pass - computation - Pert Network - Probability factor – updating and Crashing.

TEXT BOOKS

REFERENCE BOOKS
Problems in operations research - P K Gupta D S Hira, S. Chand Pub
DIPLOMA-1: SOFTWARE ENGINEERING

Subject Description: This subject deals with Software Engineering concepts like Analysis, Design, Implementation, Testing and Maintenance.

Goal: Knowledge on how to do a software project with in-depth analysis.

Objective: To inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.

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TEXTBOOK:

1. SOFTWARE ENGINEERING CONCEPTS – Richard Fairley, 1997, TMH.  
   (UNIT-I: 1.1-1.3, 2.3-2.4  UNIT-II: 3.1-3.4  UNIT III: 4.1-4.2, 5.1-5.2  
   UNIT-IV: 5.3-5.4, 6.1-6.4  UNIT-V: 8.1-8.2, 8.5-8.6, 9.1-9.3)

REFERENCE BOOKS:

3. SOFTWARE ENGINEERING – Stephen Schach, 7th edition, TMH.
CORE-7: COMPUTER NETWORKS

Subject Description: This subject deals different Network concepts like Layers, Wireless Concepts, Transmission and Security.

Goal: Knowledge on Computer Networks and technologies like broadband and Bluetooth.

Objective: To inculcate knowledge on Networking concepts and technologies like wireless, broadband and Bluetooth.


TEXTBOOKS:
1. COMPUTER NETWORKS – Andrew S. Tanenbaum, 4th edition, PHI. (UNIT-I:1.2-1.4 UNIT-II:2.2-2.4 UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)

REFERENCE BOOKS:
1. DATA COMMUNICATION AND NETWORKS – Achyut Godbole, 2007, TMH.
2. COMPUTER NETWORKS Protocols, Standards, and Interfaces – Uyless Black, 2nd ed, PHI.
CORE-8: GRAPHICS & MULTIMEDIA

Subject Description: This subject deals with Graphics Concepts and Multimedia methodologies.
Objective: To inculcate knowledge on Graphics & Multimedia concepts.

(GRAPHICS – UNITS I & II)
Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.


(MULTIMEDIA – UNITS III, IV & V)


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.

REFERENCE BOOKS:
1. COMPUTER GRAPHICS – Amarendra N Sinha, Arun D Udai, TMH.
2. MULTIMEDIA: Making it Work – Tay Vaughan, 7th edition, TMH.
CORE LAB-4: PROGRAMMING LAB - GRAPHICS and MULTIMEDIA

Multimedia:
1. Create Sun Flower using Photoshop.
2. Animate Plane Flying in the Clouds using Photoshop.
4. Create See-through text using Photoshop.
5. Create a Web Page using Photoshop.
6. Convert Black and White Photo to Color Photo using Photoshop.

Graphics:
1. write a program to rotate an image.
2. write a program to drop each word of a sentence one by one from the top.
3. write a program to drop a line using DDA Algorithm.
4. write a program to move a car with sound effect.
5. write a program to bounce a ball and move it with sound effect.
6. write a program to test whether a given pixel is inside or outside or on a polygon.
BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046.

COMMERCIAL ALLIED PAPER – BUSINESS ACCOUNTING
FOR B.Sc., Computer Science, B.Sc. Software System and BCA degree courses
(for the students admitted from the academic year 2007-2008 and onwards)

Credit Hours: 4

Goal: To enable the students to learn principles and concepts of Accountancy.

Objective: On successful completion of this course, the student should have understood

- Concepts and conventions of Accounting.
- Basic Accounting framework

UNIT –I

UNIT – II
Final accounts of a sole trader with adjustments – Errors and rectification

UNIT – III
Bill of exchange- Accommodation bills – Average due date – Account current.

UNIT – IV
Accounting for consignments and Joint ventures

UNIT – V
Bank Reconciliation statement – Receipts and Payments and income and expenditure account and Balance sheet – Accounts of professionals.

Note: Distribution of Marks between problems and theory shall be 80% and 20%.

BOOKS FOR REFERENCE
2. T.S.Grewal – Introduction to Accountancy- S.Chand & Company Ltd.,
DIPLOMA-2: SOFTWARE TESTING

Subject Description: This subject deals software testing concepts like unit-wise testing, integration testing and acceptance testing.

Goal: Knowledge on software testing and how to test the software at various levels.

Objective: To inculcate knowledge on Software testing concepts.


TEXTBOOKS:
   (UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6.1-6.7 UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)

REFERENCE BOOKS:
1. EFFECTIVE METHODS OF SOFTWARE TESTING–William E.Perry, 3rd ed, Wiley India.
2. SOFTWARE TESTING – Renu Rajani, Pradeep Oak, 2007, TMH.
CORE-9: RDBMS & ORACLE

Subject Description: This subject deals with RDBMS concepts using Oracle SQL and PL/SQL.
Goal: Knowledge on Oracle Programming techniques.
Objective: To inculcate knowledge on RDBMS concepts and Programming with Oracle.


TEXTBOOKS:
1. DATABASE SYSTEMS USING ORACLE – 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 MANAGEMENT SYSTEMS – Arun Majumdar & Pritimoy Bhattacharya, 2007, TMH.
2. DATABASE MANAGEMENT SYSTEMS – Gerald V. Post, 3rd edition, TMH.
CORE-10: VISUAL PROGRAMMING - VISUAL BASIC

Subject Description: This subject deals Visual Basic Programming concepts.

Goal: Knowledge on Visual Programming and how to develop a Project.

Objective: To inculcate knowledge on Programming and Project Development using Visual Basic.


TEXTBOOK:
1. VISUAL BASIC – Byron S. Gottfried, Schaum’s Outline series, TMH.

REFERENCE BOOK:
1. The Complete reference VISUAL BASIC – Noel Jerke, TMH.
CORE-11: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Subject Description: This subject deals with various AI Concepts and Methodologies.

Goal: To Acquire Knowledge on various AI Techniques and Expert Systems.

Objective: To have enriched knowledge regarding heuristic search, Knowledge representation and Expert systems


UNIT II: Heuristic Search techniques: Generate and Test – Hill Climbing – Best-Fist, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT III: Knowledge representation issues: Representations and mappings – Approaches to Knowledge representations – Issues in Knowledge representations – Frame Problem.


UNIT V: Representing knowledge using rules: Procedural Vs Declarative knowledge – Logic programming – Forward Vs Backward reasoning – Matching – Control knowledge


Text Book:

Reference Book :
AOS-I: CLIENT/SERVER COMPUTING

Subject Description: This subject deals with concepts of Client / Server computing. Also it deals with various components of Client / Server Applications.

Goal: Knowledge on Client / Server Concepts and various components of client / server Applications.

Objective: To inculcate knowledge on Client / Server concepts.


TEXTBOOKS:
1. CLIENT / SERVER COMPUTING – Patrick Smith, Steve guenferich , 2nd edition, PHI. (Chapters 1-8 & 10)

Reference Book :
2.”Dewire and Dawana Travis “Client/ Server Computing “, TMH.
CORE LAB-5: PROGRAMMING LAB - VB & ORACLE

PRACTICAL LIST

VISUAL BASIC

1. Write a simple VB program to accept a number as input and convert them into
   a. Binary
   b. Octal
   c. Hexa-decimal

2. Write a simple VB program to add the items to list box with user input and move the
   selected item to combo box one by one.

3. Write a simple VB program to develop a calculator with basic operation.

4. Design an form using common dialog control to display the font, save and open
   dialog box without using the action control property.

5. Write a simple program to prepare a Questionnaire.

6. Write a VB Program to develop a menu driven program
   Add a MDI window in the form and arrange them in the cascading/horizontal style
   using menus (Create a menu to add form, arrange) (Menu Item 1).
   Also change the form color using the menu in another menu item (Menu Item 2).

ORACLE

Data Definition Basics

7. Create the following table  (PK - Primary Key, FK – Foreign Key) cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head with the mapping
   given below:

<table>
<thead>
<tr>
<th>cat_head</th>
<th>route_head</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cat_code PK)</td>
<td>(cat_code FK)</td>
</tr>
<tr>
<td>route_head</td>
<td>route_detail</td>
</tr>
<tr>
<td>(route_id PK)</td>
<td>(route_id FK)</td>
</tr>
<tr>
<td>ticket_head</td>
<td>ticket_detail</td>
</tr>
<tr>
<td>(tick_no PK)</td>
<td>(tick_no FK)</td>
</tr>
<tr>
<td>place_head</td>
<td>route_detail</td>
</tr>
<tr>
<td>(place_id PK)</td>
<td>(place_id FK)</td>
</tr>
</tbody>
</table>

   (i) Alter the table ticket_header to add a check constraint on ticket_no to accept
       values between 1 and 500
   (ii) Alter table route_header to add a column with data type as long.

Data Manipulation Basics

8. (a) Insert values to above tables
   (b) Display only those routes that originate in madras and terminate at cochin
   (c) Display only distinct category code from the table route_header in descending
       manner.
   (d) Update the table route_header to set the distance between madras and coimbatore
       as 500
Queries
9. a. Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header.
   B. Select rows from route_header such that the route_id are greater than all route_id in route_detail
   Where place id is “100”.
   C. Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id

Report
10. Generate a report from the table ticket_detail for the particular ticket_no

PL/SQL
11.
   a. Write a PL/SQL block to update the bus_station to be “ERODE” where place_id is ’01’ or ’05’ [place_header]
   b. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 then update the fare to be 200
   c. Write a Database trigger before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday
   d. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details

PROJECT
12. Develop a Simple Project for Student Database Management System using VB as front end and ORACLE as back end.
DIPLOMA-3: SOFTWARE PROJECT MANAGEMENT

Subject Description: This subject deals with various Techniques for Software Project Management.
Goal: Enables to have sound knowledge on Software Project Management.
Objective: To inculcate knowledge on how to manage a Software Project.


TEXTBOOK:
1. SOFTWARE PROJECT MANAGEMENT – Bob Hughes & Mike Cotterell, 4th ed, PHI.
CORE-12: NETWORK SECURITY & CRYPTOGRAPHY

Subject Description: deals with principles of encryption algorithms, and conventional and public key cryptography.
Goal: enable to know the levels of network security and security tools.
Objective: to impart knowledge regarding cryptography and network security.

UNIT-I:

UNIT-II:
Triple des-blow fish – RCS Advanced Symmetric Block Ciphers – RC4 stream Cipher confidentially using symmetric encryption – introduction to number theory – public – key cryptography and RSA.

UNIT-III:

UNIT-IV:

UNIT-V
Intruders – intrusion detection – password management – viruses and related threats – virus countermeasures – fire wall design principles – trusted systems

TEXTBOOK:
Fourth edition, phi Education Asia.

REFERENCE BOOKS:
1) Atul kahate “Cryptography and Network Security” second edition. TMH.
2) Behrouz A.forouzan” Cryptography and Network Security “ TMH.
CORE-13: WEB TECHNOLOGY

Subject Description: This subject deals TCP/IP, FTP, WWW and Web technologies like ASP, JVM, DCOM, XML and WAP.

Goal: Knowledge on various Web technologies.

Objective: To inculcate knowledge web technological concepts and functioning internet.


TEXTBOOKS:
1. WEB TECHNOLOGIES TCP/IP to Internet Applications Architectures – Achyut S Godbole & Atul Kahate, 2007 ,TMH.


REFERENCE BOOKS:
1. INTERNET AND WEB TECHNOLOGIES – Rajkamal, TMH.
2. TCP/IP PROTOCOL SUITE – Behrouz A. Forouzan, 3rd edition, TMH.
CORE-14: JAVA PROGRAMMING

Subject Description: This subject deals with Java Programming concepts.

Goal: Enable to create wide range of Applications and Applets using Java.

Objective: To inculcate knowledge on Java Programming concepts.


TEXTBOOKS:
1. PROGRAMMING WITH JAVA – A PRIMER - E. Balagurusamy, 3rd Edition, TMH.

REFERENCE BOOKS:
1. THE COMPLETE REFERENCE JAVA 2 - Patrick Naughton & Hebert Schildt, 3rd ed, TMH
2. PROGRAMMING WITH JAVA – John R. Hubbard, 2nd Edition, TMH.
AOS-2: DATA MINING

Subject Description: This subject deals with various Data Mining Techniques.

Goal: Enables to have sound knowledge on data mining Techniques.

Objective: To inculcate knowledge on Data mining Concepts.


TEXTBOOK:

REFERENCE BOOK:
CORE LAB-6: PROGRAMMING LAB - JAVA

1. Write a Java Applications to extract a portion of a character string and print the extracted string.

2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.

3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.

4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.

5. Write a Java Program to draw several shapes in the created windows.

6. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called “my details”, When the button is clicked its corresponding values are to be appeared in the text fields.

7. Write a Java Program to demonstrate the Multiple Selection List-box.

8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple line for address

9. Write a Java Program to create Menu Bars and pull down menus.

10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.

11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.

12. Write a Java Program which open an existing file and append text to that file.
DIPLOMA-4: SOFTWARE TESTING LAB

Write at least 10 TEST CASES for the following programs. Test cases can be for Input data, Conditional expressions, control transfer, output, etc. Run-Test-Debug- until all the test cases are in success status. Marks distribution as follows:
1. List of Test Descriptions (at least 10) for the Program. (20%)
2. Test Cases (40%)
3. Program with all test case results success (30%)
4. Record (10%)

TEST CASE Example:

<table>
<thead>
<tr>
<th>Test-Id</th>
<th>Test Description</th>
<th>Test Steps</th>
<th>Expected Output</th>
<th>Actual Output</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC-01</td>
<td>Acceptance of 10 digit input data</td>
<td>Input 10 Digit Number</td>
<td>Accepting 10 digit number</td>
<td>Accepted 10 digit number</td>
<td>Success</td>
</tr>
<tr>
<td>TC-02</td>
<td>Non- acceptance of character data</td>
<td>Input a character data &quot;X&quot;</td>
<td>Character X should not be accepted</td>
<td>Accepting Character data</td>
<td>Failure</td>
</tr>
</tbody>
</table>

Modify PIC X(10) into PIC 9(10) and then run program for Test-id TC-02 again

<table>
<thead>
<tr>
<th>Test-Id</th>
<th>Test Description</th>
<th>Test Steps</th>
<th>Expected Output</th>
<th>Actual Output</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC-02</td>
<td>Non- acceptance of character data</td>
<td>Input a character data &quot;X&quot;</td>
<td>Character X should not be accepted</td>
<td>Character data not accepted</td>
<td>Success</td>
</tr>
<tr>
<td>TC-03</td>
<td>Digit sum of 10 digit is in single digit</td>
<td>Output data</td>
<td>Single digit sum</td>
<td>Single digit Sum</td>
<td>Success</td>
</tr>
</tbody>
</table>

PRACTICAL LIST

1. Test the COBOL program: Finding the sum of individual digits of a 10-digit number until a single digit is produced.

2. Test the COBOL program: Accept the inputs student Name, Marks for five subjects and declare the result as PASS if the student gets minimum 40 in each subject otherwise declare the result as FAIL.

3. Test the COBOL program: Accept the date in DDMMYY format and display the result in the format 3rd APR 1998.

4. Test the C program: Sort and store the elements two arrays of integers into the third list.

5. Test the C program: Experiment the operations of STACK using array implementation.

6. Test the C program: Menu-driven option for QUEUE operations to perform the following:
   1. Insertion
   2. Deletion
   3. Modification
   4. List

7. Test the C++ Program: Palindrome string checking program. (using Pointers)