संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

(FACULTY OF ENGINEERING & TECHNOLOGY)

PROSPECTUS

Prescribed For

Post Graduate Diploma in Computer Science
Examination of 2010-2011
(One year Course)
(Bi-Annual Pattern)
Credit Grade System

2010

Price Rs. 10/-

SYLLABUS
PRESCRIBED FOR
ONE YEAR POST GRADUATE DIPLOMA IN
COMPUTER SCIENCE
SEMESTER : FIRST

1 CS 1/1 MCA 1   COMPUTER ORGANIZATION

Unit I
Chapter Objectives, Evaluation of Computers and computer generations, Technological trends, Measuring performance, speed up, Amdahl's law, Von Neumann machine architecture, Functional units and components in computer organization, Program development tools, Operating systems.

Unit II
From Electron to Bits, Binary representation of positive integers, Negative integers, Fixed point arithmetic operations on positive and signed (Negative) integers, Floating-Point numbers (IEEE 754 standard) and operations, BCD arithmetic operation, Design of ALU, Bit slice processors.

Unit III
Concept of instruction formats and instruction set, instruction set types, types of operands and operations, Generation of memory addresses and addressing modes, Subroutine nesting using stacks to implement subroutine calls and calling conventions, Processor organizations, Register organization, Stack based organizations, Encoding of machine instructions, General features of RISC and CISC instruction sets, modern processors convergence of RISK with CISC, Processor microarchitecture-I- Fundamental concepts for data path implementation,Processor microarchitecture-II - Data path implementation, microprogrammed execution, recent innovations in execution unit design.

Unit IV
Instruction pipeline, instruction pipeline hazards, overcoming hazards using a pipeline with forwarding paths, instruction set design influence on pipelining, example of pipelined CISC processor, example of pipelined RISC processor, VLIW (Very Long Instruction Word) processors, Vector processors, Multithreaded processors, Compilation techniques support to instruction level parallelism, Extracting parallelism.

Unit V
Some basic concepts, memory hierarchy, internal organization of semiconductor main memory chips - RAM and ROM, semiconductor main memories - RAM, semiconductor Read - Only memories - ROMs, speed, size and cost, secondary storage magnetic ferrite core memories, optical disks CD-ROM memories, data caches, instruction caches, and unified cache, features describing a cache, cache implementations, multilevel caches.

Unit VI
Virtual memory organization, mapping functions for translating the program pages in virtual to physical addresses space, partitioning, segmentation (superpages or page blocks) partitioning of virtual address space in to segment and page address, demand paging and swapping, cache and virtual swapping, cache and virtual memory, inverted page tables concept, protection between programs running on the same system, accessing I/O devices, programmed I/O, interrupts, direct memory access DMA, bus arbitration, interface circuits, I/O interfaces, I/O processors, external I/O devices.

Text Book : **Computer Architecture by Micholus Carter & Rajkamal, Schaum Series Pub.**

1 CS 2/1 MCA 2   PROBLEM SOLVING USING C++

Unit I.
Objects & Classes in C++ : Declaring & using classes, Constructors, Objects as functions arguments, Copy Constructor, Static class data. Arrays of objects, C++ String class.

Unit II.
Operator overloading : Overloading unary & binary operators. Data conversion. Pitfalls of operator overloading. Pointers & arrays. Pointers & functions. new & delete operators. Pointers for objects.

Unit III.
Inheritance in C++ : Derived class & base class, Derived class constructors, Function overloading, class hierarchies, Public and private inheritance, Multiple inheritance. Containership : classes within classes.

Unit IV.
Virtual functions concepts, Abstracts classes & pure virtual functions. Virtual base classes, Friend functions, Static functions, Assignment and copy initialization, the this pointer. Dynamic type information.

Unit V.
Streams & Files in C++ : Stream classes, stream errors, disk file I/O with streams, File pointers, Error handling in file I/O. File I/O with members functions, overloading the extractions & insertion operators, Memory as a stream object, command-line arguments. Multifile programs.

Unit VI.
Function Template, Class templates, Exception syntax, Multiple exceptions, exception with arguments. Introduction to the Standard Template Library. Algorithms, Sequential Containers, Iterates, Specialized iterates, Associative containers. Function objects.

Text-Book :
1. Savitch: Problem Solving using C++ (Addison Wesley) Low-Priced Edition.

References :
1. Robert Lafore Object-Oriented Programming in C++ (Galgotia)
2. Herbert Schildt C++ : Complete Reference (TMH)
3. Bjarne Stroustrupe C++ Programming Language (Addison-Wesley)
4. Venugopal Mastering C++ (TMH)
5. Lipmann C++ Primer (Addison-Wesley)

1 CS 3 /1MCA3   COMPUTER ORIENTED STATISTICAL METHODS

UNIT-I:
Introduction
Definitions : Websters, secrists, Gronton and Cowden definitions of statistics
Improtance of statistics
Scope of statistics : Industry, Economy, Planning, medical science, Computer Science etc.
Limitations of statistics.
General principles of classification of data.
Construction of Frequency distribution, cummulative frequency distribution, relative frequency distribution. Graphical representation of frequency distribution.
Diagrammatic representation : Simple bar, subdivided bar, pie diagram.
Numerical Problems.

UNIT-II :
Measures of central Tendency & Measures of dispersion:
Concept of central tendency, criteria for good measures of central tendency.
Arithmetic mean for grouped and ungrouped date, properties of a.m., combined mean, weighted mean, merits and demerits. Median, mode, G.M., H.M. for grouped & ungrouped data with its merits & demerits.
Partition values : quartiles, deciles, percentiles
Numerical problems on central tendency.
Concept of dispersion criteria for good measures of dispecsion.
Measures of dispersion : Range, quartile deviation, mean deviation, S.D for grouped & ungrouped data with its merits & demerits   Variance : Definition for grouped & ungrouped

data, combined variance, co-efficient of Dispersion, co-efficient of variation, combined variance. Numerical problems on measures of dispersion.

UNIT-III:
Moments, measures of Skewness and Kurtosis correlation
Raw & Central moments : for grouped & ungrouped data (upto first four moments) & their relationships. Skewness, measures of skewness, co-efficient of skewness, bempirical relation between mean, mode, median. Pearson's & Bowley's co-efficient of Skewness. Kurtosis & types of kurtic curves, co-efficient at Kurtosis based on moments.
Numerical problems on moments, co-efficient of skenmen & co-efficient of Kurtosis.

Unit-IV
Corelation : Concept of correlation for bivariate data, scatter diagram, positive, negative & no correlation, cause and effect relationship.
Karl pearson's co-efficient of correlation(r), limits at r and interpretation of r, assumption on r.
Effect of change of origin & scale on r, independence of variables.
Spearman's Rank correlation, repeated rank correlation.
Numerical problems on karl pearsons & spearman's rank correlation co-efficient.

UNIT-V:
Regression :
Concept of regression & linear regression
Derivation of regression lines by method of least squares.
Properties of regression co-efficients.
Linear and Non-linear regression. : Fitting of second degree curve & curve y=abx by least square method.
Numerical problems on linear & non-linear regression.
Multiple regression by yule's notations (for tri-variat data)
Multiple correlation & partial correlation.

UNIT-VI:
Time series :
Definition of Time series & uses of time series
Components of Time series, Additive & multiplicative models.
Methods of estimating treand by moving average method graphical method, semiavarage method & by least square methods.
Numerical problems on Time Series.

Text Books:
J.N. Kapoor   :   Mathematical Statistics (MCG)

Trivedi : Probability and Statistics with Computer Science Applications (TMH)

References:
1. Statistical Methods (An Introductory Text) : J. Medhi
2. Modern Elementary Statisics : J.E. Freund
3. Statistical Methods : S.P. Gupta
4. Fundamentals of Statistics : Goon, Gupta, Dasgupta

1 CS 4/IMCA4   PRINCIPLES OF MANAGEMENT
(8 hours/unit)

UNIT I   Introduction : Definition and concepts of management, Importance of management. Various management functions & control, responsibilities. Human resources planning, Decision-making. Trade unions & collective bargaining.

UNIT II   Organization planning, design and development: Production resources, Production planning, types of production system, production systems, production control.

UNIT III   Product design & development : Introduction, design of the product, New product development; Material planning and control. Inventory control technique.

UNIT IV   Maintenance and system reliability: Concepts and Objectives of maintenance. Failure analysis,Reliability,Maintenance system & Classification. Maintenance planning, TQM ISO 9000 and Quality audit.

UNIT V   Marketing management : Introduction, marketing planning. Consumer behavior, product management, Pricing & promotion decision.Financial planning. Source of finance.

UNIT VI   Project Management: Concepts and importance of project, Project implementation, MIS.MIS meaning and objectives. Types of data, methods of data collection, analysis and presentation of data. Editing, reporting and presentation of data, Decision options.

Textbook:
A.K.Gupta,J.K. Sharma : Management of Systems (Macmillan)

Referances :
1.Appleby   :Modern Business Administration, 6/e (Macmillan)
2.Tritaphy & Reddy : Principals of Management, 2/e (TMH)
3.Gupta, Sharma et : Principales of Practices of Management (Kalyani)

1 CS 5/IMCA5   COMMUNICATION SKILLS

Unit I: Comprehension – word study :-
Synonym, antonym, meanings, matching words, adjectives, adverbs, prefix and suffix, correct forms of commonly misspelled words, understanding of the given passage. Skimming for general ideas, Contextual vocabulary, Error detection, Note making and Location of argument from text, Ability to answer inferential, factual and personal response.

Unit-II   Comprehension - - Structure study :-
Simple and compound sentences, types of conjunctions, singular and plural, tenses and their effect on verb forms. Use of - not only - but also, if clause, since, may, can, could, would, too etc. Active and passive forms, negative and interrogative, punctuation and capitalization.

Unit III   Theoretical background - importance of communication, its process, model of communication its components & barriers. Types of written communication, organization of a text (Titles, summaries, headings, sequencing, signaling, cueing etc.), Important text factors (length of paragraph, sentences, words, clarification and text difficulty). Evaluation of written communication for its effectivity and subject content.

Unit IV   Specific formats for written communication like – business correspondence, formal reports, technical proposals, research papers and articles, advertising and graphics. Format for day-to-day written communication like applications, notices, minutes, quotations, orders, enquiries etc. Letter writing, Preparation of Curriculum – Vitae,Composing messages-telegrams, telex,fax and e-mail Writing memos, agendas and notices of meetings, Preparing advertisements.

Unit-V   Oral communications - Important objectives of interpersonal skills, Verbal communication, its significance, face to face communications, group discussion and personal interviews. Voice modulation and logical argument, Comprehension of text at normal reading speed. Listening skill and timely response, Participation and contribution to discussion, Command over language Formal and informal style of communication, Body language.

Unit-VI   Non-verbal communication, types of graphics and pictoral devices. Meaning and purpose of meetings,seminars, symposia, conference and workshop. Methodology of conduction of meetings, seminars, symposia, conference and workshop. Brochure preparation for seminars, symposia, conference and workshop. Preparation of minutes of meeting.

Books Recommended :

1) Krishna Mohan, Meera Banerjee : Developing Communication Skills, MacMillan India Limited.
2) Chrissie Wright (Editor) : Handbook of Practical Communication Skills, Jaico Publishing House.
3) Curriculum Development Centre, TTTI WR, Bhopal : A Course in Technical English, Somaiya Publication Pvt. Ltd.
4) F. Frank Candlin : General English for Technical Students, University of London Press Ltd.

1 CS 6/1MCA6   PROBLEM SOLVING USING C++
LAB : LIST OF PROGRAMS

The sample list of program is given below. This list can be used as guide line for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

1   Write a C++ program to implement a stack with its constructor and two member functions PUSH and POP

2   Write a C++ program to find product of two same numbers from 0 to 9 stored in an object array of 10 objects and then free the memory space occupied by an object array

3   Write a C++ program to overload minus operator as an unary and binary operator

4   Write a C++ program using friend operator function to overload plus binary operator

5   Write a C++ program to calculate the circumference of an earth (subclass) after getting distance of it measured from sun from planet (super class)

6   Write a C++ program for an inventory that stores the name of an item, the number on hand, and its cost. Include an inserter and an extractor for this class

7   Write a C++ program that creates an output file, writes information to it, closes the file and open it again as an input file and read the information from the file

8   Write a C++ program that counts number of words in a file

9   Write a C++ program to create an abstract class area having an abstract function get Area which will find an area of derived classes rectangle and triangle

10   Write a C++ program to create a generic function that swaps the values of the two variables it is called with"

1 CS 7/1MCA7 COMPUTER ORIENTED STATISTICAL METHODS - LAB.

Minimum 12 practicals to be performed throughout the semester based on following (using C or C++ language).

1.   Construction of frequency distribution, graphical methods & diagrammatic representation.
2.   Problems on measures of Central Tendency.
3.   Problems on measures of dispersion.
4.   Problems on moments, measures of Shewmen and Kurtosis.
5.   Computation of correlation co-efficient for bivariate data.
6.   Fitting of linear & non linear regression lines
7.   Computation of rank correlation co-efficient
8.   Problems on time series.

1 CS 8/1MCA8   COMMUNICATION SKILLS LABORATORY
Objective :

On completion of this laboratory the candidate should be able to demonstrate adequate skills in oral and written communication for technical English language, actively participate in group discussions and interviews and exhibit the evidence of vocabulary building. Candidates should be assessed through continuous monitoring and evaluation.

The sample list of experiments is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

1.   Assignments and tests for vocabulary building
2.   Technical report writing
3.   Group discussions
4.   Interview techniques
5.   Projects and tasks such as class news letter
6.   Writing daily diaries and letters
7.   Interactive language laboratory experiments.

Text Book :   Norman Lewis : Word Power Made Easy
http://www.teachingenglish.org.uk

1 CS 9/1MCA9   COMPUTER LABORATORY-I
This laboratory is based on the study of following software

1.   The study of Windows/Linux operating systems :
The topics to be covered include
1) The study of basic commands handling files, directories, system configuration and system calls
2) Shell programming,

3) General purpose utilities & editors
4) Seeing/resetting file attributes/ modes, sharing files,
5) TCP/IP networking

2. The study of spreadsheets : Creating Worksheets, Formatting cells, conditional formatting of cells and data, Use of functions, Creating Macros, Creating different types of charts. (At least 6 exercises covering above mentioned features) Use MS-Excel or Calc from Open Office Under Linux.

3. The study of DBMS : Creating Database, Tables, Views, Queries, Creating Reports (At least 6 exercises covering above mentioned features)

2 MCA 1 / 2 CS 1   DATA STRUCTURES & ALGORITHMS

SEMESTER : SECOND
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Unit-I
Data structures basics, Mathematical/algorithmic notations & functions, Complexity of algorithms, Subalgorithms. String processing: storing strings, character data type, string operations, word processing, and pattern matching algorithms.

Unit-II
Linear arrays and their representation in memory, traversing linear arrays, inserting & deleting operations, Bubble sort, Linear search and Binary search algorithms. Multidimensional arrays, Pointer arrays. Record structures and their memory representation. Matrices and sparse matrices.

Unit-III
Linked lists and their representation in memory, traversing a linked list, searching a linked list. Memory allocation & garbage collection. Insertion deletion operations on linked lists. Header linked lists, Two-way linked lists.

Unit-IV
Stacks and their array representation. Arithmetic expressions: Polish notation. Quick sort, an application of stacks, Recursion. Tower of Hanoi problem. Implementation of recursive procedures by stacks, Queues. Deques. Priority queues.

Unit-V
Trees, Binary trees & and their representation in memory, Traversing binary trees. Traversal algorithms using stacks, Header nodes: threads. Binary search trees, searching, inserting and deleting in binary trees. Heap and heapsort. Path length & Huffman's algorithm. General trees.

Unit-VI
Graph theory, sequential representation of graphs, Warshalls' algorithm, Linked representation, operations & traversing the graphs. Posets & Topological sorting. Insertion Sort, Selection Sort. Merging & Merge-sort, Radix sort, Hashing.

Text Book:
Seymour Lipschutz: "Theory & Problems of Data Structures" (TMH)

References:
1. Horowitz & Sahni "Data Structures" (Galgotia)
2. Trembley & Sorenson "Data Structures" (TMH)
3. Standish "Data Structures in JAVA" (Pearson)
4. Bhagat Singh & Naps "Data Structures" (TMH)

2 CS22 / MCA 2   OBJECT ORIENTED PROGRAMMING
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Unit-I:
Introduction, Software development, life-cycle approach, Software requirement specifications, Algorithms, VB.Net projects, Designing Objects, classes & applications, Object relationships, Class design examples, Class code in VB.Net.

Unit-II:
VB.Net language, CLR, Variables, expressions, Statements, blocks, structured variables & Enumerations. Classes, Object-orientation & Variables, Control Structures, Selection Structures, Repetitions, Subs, functions & Parameters, Errors & Exception handling, Scope.

Unit-III:
Data & Object Structures, organizing the Data, Arrays, Other data Structures, Collections, Inheritance in VB, Code inheritance, Interface Inheritance, Inheriting the data structures, Visual inheritance, Polymorphism.

Unit-IV:
Winform applications: Structure of application, Winform basics, user interface code & the form designer, Tools for creating a user interface, dialog boxes & the other user-interface options, Other form styles, control collection, delegates and event handlers, Visual inheritance.

Unit-V:
Windows controls, Accessing controls, Command controls, Simple input controls, List controls, manipulating the controls at runtime, Graphics in Winform Programs. Object modeling: application structure, real-worlds object modeling with object relationships, software patterns.

Unit-VI:
Storing application data, Computer files, Windows registry, File storage, structured data, Serialization. Databases in Visual Basic.Net Object-oriented database systems, .Net support for relational database systems, data access in a three-tiered system, reading & writing data.

Text Book:
Alisstair McMonnies "Object-Oriented Programming in Visual Basic.NET" (Pearson Education)

References :

1. Hamilton J.P. : "OOP with Visual Basic.NET" (O'Reilly Media Inc.)
2. Reynolds-Haertle R.A. : "OOP with Visual Basic.NET & Visual C#.NET" (Microsoft Press)
3. Michael Halvorson : "Microsoft visual Basic.NET Step By Step " (Microsoft Press)
4. Francesco Balena : "Programming Microsoft Visual Basic.NET" (Microsoft Press)

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2 CS 3 / 2MCA 3   SYSTEM ANALYSIS & DESIGN

UNIT I. Introduction : System Analysis & Design concepts. Role of system analyst. Review of System DLC. Organization as systems. Levels of management culture. Project fundamentals. Feasibility study. Activity planning & control. Managing analysis & design activities.

UNIT II. Sampling and investigating hard data. Interviewing. Planning & conducting interview & reporting. Joint application design. Using questionnaires. Planning designing and administering the questionnaire.

UNIT III. Coservation of a decision-makers behavior and office environment. Prototyping : User reactions. Approaches to prototyping & developing prototype. Data flow approach to requirements. Developing DFDs. Logical & Physical DFDs. Examples of DFDs.

UNIT IV. Data dictionary concept. Data repository. Creating & using data dictionary. Overview of process specifications. Structured English, Decision tables/trees. Decision support system & decision making concepts relevant to DSS. Semi structured decisions. Multiple-criteria decision-making.

UNIT V. System Proposal : Ascertaining hardware/software needs. Identifying & forecasting cost/benefit & comparing cost/ benefit. Writing and presenting the systems proposals. Principles of Delivery.

UNIT VI. Output Design Objectives. Designing printed output, Screen output. Input Design objectives. Form Design. Screen Design for input. Introduction to OOSAD. : Object-Oriented Analysis. Object-Oriented Design.

Text-book :

Kenneth E.Kendall &: "System Analysis and Design" Julie E.Kendall (Pearson Education) 3/e

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References :

1. Yeates "System Analysis & Design" (Macmillan)
2. J.Fitgerald & A.Fitgerald. "Fundamentals of System Analysis & Design" (John-Wiley) 3/e
3. Edward "System Analysis & Design" (McGraw-Hill)
4. Whilten, Bentley, Barlow "System Analysis & Design Methods" (Galgotia) 2/e.

2 CS 4 / 2MCA 4   DATA COMMUNICATION

Unit-I : Data communication concepts, uses and applications. Telephone : Voice communication networks, Switches, PBX cellular technologies, Fax. IVR, Voice Mail.

Unit-II : Hardware; network architecture, Hosts, Clients, Circuits, Special purpose Communication Devices, FEP, Multiplexers, Protocol Coverters, Line adapters.

Unit-III: Data transmission : Coding, Transmission modes, Band width, Modulation, Modem : Types and Standards, PAM & PCM techniques, Connector cables.

Unit-IV: OSI model, MAC protocol; Controlled & contention-based, Error control in networks, Data link Protocols : asynchronous & synchronous Transmission efficiency.

Unit-V : Network Layer : Topologies. Network routing. Network Standards and network protocols: TCP/IP, IPX/SPX, X.25 & GOSIP protocols.

Unit-VI: LANs : uses and types, LAN components. Ethernet : topology, MAC, types, Token rings : topology, MAC, types, Other types of LANs, MAP(IEEE 802.4)., ArcNet, Apple Talk.LAN performance improvement, selecting a LAN.

Text Book :

1. J.Fitzgerald & A.Denis Business Data Communication & Networking, (5/e) (John Wiley & Sons)

References :

1. Schweber: Data Communication (McGrawHill)
2. Miller : Digital & Data Communication (Jaico)

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2CS5   BUSINESS COMPUTING

Unit-I : Database definitions. Various types, Relational Database, Oracle & its recent versions, ORDBMS characteristics. Oracle Architecture, Memory, Process, Physical and Logical Structures in Oracle.

Unit-II : Various Database Objects : Table space, Schema, Table, Views, Sequence, Clusters, Snapshots, Data access SQL Commands, Oracles' Procedural Extension, Oracle Queries.

Unit-III : Various Functions In SQL : Oracle Conversion, Date, Numeric, and Character Functions, Single and Multiple row Functions, Complex queries, Outer Joins.

Unit-IV : Tables & table-related commands, Privileges, Storage for tables, commands for modifying, Renaming, dropping, altering the table, commands for modifying the table data.

Unit-V : PL/SQL : Syntax overview, block structure, Variables, Program flow, Procedures, Functions, triggers, cursors, Packages, in PL/SQL, Error handling in PL/SQL.

Unit-VI: Database Constraints : basics, Creating & modifying constraints, Keys and other constraints, Oracle users, different types of privileges, Roles, Profiles.

Books :
1. Lave Singh etal Orcle Developers' Guide (Techmedia)
2. Oracle Press Introduction to Oracle (TMH)
3. Oracle Unleashed (Sams)

2CS6/2MCA6   DATA STRUCTURES & ALGORITHMS LABORATORY

The sample list of program is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected out comes.

Further, C, C++ or Java may be used as the programming language.

1. Write an application to implement Tower of Hanoi Problem Algorithm.
2. Write an application to implement Abstract data type stack
3. Write an program to evaluate Post fix expression using stack
4. Write a program to implement Abstract data type queue.
5. Write a program to implement singly linked list that performs various operation such as insertion, deletion, searching a node in linear linked list.
6. Write a program to implement Preorder Traversal of a binary tree.
7. Write a Program to search a given element using Binary Search.
8. Write a Program to implement Selection Sort.
9. Write a Program to implement Merge Sort.
10. Write a Program to Perform insertion or search in a specified level of a stack implemented tree- structured symbol table.

2 CS 7 / 2MCA7 OBJECT ORIENTED PROGRAMMING- LAB.
Practical :-
Minimum ten programming assignments should be completed based on the above syllabus.

2 CS 8/2MCA 8   SYSTEM ANALYSIS & DESIGN LAB.
8 to 10 Examples of SAD from text book covering each unit of syllabus, using any available SAD tool, as from one available with text book.

2CS 9   BUSINESS COMPUTING LABORATORY
Based on above syllabus : Minimum Twelve Lab. Assignments

2 CS 10   PROJECT

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DIRECTION

No. 28/2010   Date : 24/6/2010

Subject : Examination leading to the Post-Graduate Diploma in Computer Science (One Year Course ..... Credit Grade System)

Whereas the schemes of teaching & examinations of Post-Graduate Diploma in Computer Science course has been accepted by the Academic Council vide Item No. 49 (I) in its meeting held on 28-05-2010 as per the Credit Grade System for its implementation from the Academic Session 2010-2011,

AND

Whereas admissions to the I Semester of Post-Graduate Diploma in Computer Science course are to be made in the Academic Session 2010-2011,

AND

Whereas the matter for admission of the students at the examinations is required to be regulated by an Ordinance,

AND

Whereas the schemes of teaching & examinations of I and II Semesters of Post-Graduate Diploma in Computer Science course are to be implemented from the academic session 2010-2011,

AND

Whereas the schemes of teaching & examinations are required to be regulated by the Regulation,

AND

Whereas the process of making an Ordinance and the Regulation is likely to take some time,

AND

Whereas syllabus for I and II Semesters of Post-Graduate Diploma in Computer Science course is to be sent for printing.

Now, therefore, I, Dr.Ku.Kamal Singh, Vice-Chancellor of Sant Gadge Baba Amravati University in exercise of powers confirmed upon me under sub section (8) of Section 14 of the Maharashtra Universities Act, 1994, hereby direct as under :

1. This Direction may be called "Examination leading to the Post-Graduate Diploma in Computer Science (One Year Course ..... Credit Grade System) Direction, 2010.
2. This Direction shall come into force w.e.f. its issuance.
3. Following shall be the Examinations leading to the Post - Graduate Diploma in Computer Science namely.

(i) Post Graduate Diploma in ComputerScience, Part-I Examination, and

(ii) Post Graduate Diploma in Computer Science, Part-II Examination.

4. Duration of each of the above Parts shall be one Term with an examinations at the end of each Term.

5. (i) The examinations specified in paragraph 3 above shall be held twice a year at such places and on such dates as may be appointed by the University.

(ii) Main Examination of Part-I shall be held in Winter and Supplementary Examination in Summer.

(iii) Main Examination of Part-II shall be heldin Summer and Supplementary Examination in Winter.

6. Subject to his/her compliance with the provisions of this Direction and other Ordinances in force time to time following candidates are eligible for admission to the Post-Graduate Diploma (One Year) in Computer Science :-

Graduates of the University or of any statutory University equivalent there to, in any faculty with 50% marks (45% for B.C. Candidates at the degree level) and offering Mathematics and Statistics at the H.S.S.C. XII th standard of equivalent Examination.

7. For purposes of instruction and examinations the students shall study sequentially.

8. Subject to his/her compliance with the provisions of this Direction and other Ordinances (Pertaining to examination in General) in force from time to time, the applicant for admission to examination at the end of the course of study of a particular part shall be eligible to appear at it, if:

(i) He/She satisfied the condition in the table and the Provision there under :-

TABLE I

Sr. No.	Name of examination	
1	2	3
1.	P.G Diploma in Computer Science Part I Part I	The student should have completed the term satisfactorily
2.	P.G Diploma in Computer Science Part II Part - II	

(Note - Subjects prescribed and numbered in the scheme of Examination shall be treated as seperate subjects, however, the theory and practical, if any, of the subject shall be treated as seperate Head of Passing.)

(ii) He/She has complied with provisions of Ordiance pertaining to Examination in general.

(iii) He/She has prosecuted a regular coourse of study in University Department/College affiliated to the University.

(iv) He/She has in the opinion of the Head of the Department/ Principal, shown satisfactory progress in his/her studies.

9. Papers and the Practicals in which an examinee is to examined, maximum marks for these and the minimum pass mark which an examinee must obtain in order to pass in the subject and the examination are detailed in the Examination Scheme.

10. Examination fees for each part of the examination and also the practical examination shall be as prescribed by the University for time to time.

11. The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee shall be as given below :-

The marks will be given in all examinations which will include college assessment marks and the total marks for each Theory / Practical shall be converted into Grades as per Table II.

SGPA shall be calculated based on Grade Points corresponding to Grade as given in Table II and the Credits allotted to respective Theory / Practical shown in the scheme for respective semester.

SGPA shall be computed for every semester and CGPA shall be computed only in VIII semester. The CGPA of VIII semester shall be calculated based on SGPA of VII and SGPA of VIII semester as per following computation :-

$$\text{SGPA} = \frac{C_1 \times G_1 + C_2 \times G_2 + \dots + C_n G_n}{C_1 + C_2 + \dots + C_n}$$

Where C_i = Credit of individual Theory / Practial
G_i = Corresponding Grade Point obtained in the respective Theory / Practical

$$\text{CGPA} = \frac{(\text{SGPA})_I \times (Cr_I) + (\text{SGPA})_{II} \times (Cr)_{II}}{(Cr)_I + (Cr)_{II}}$$

Where $(\text{SGPA})_I$ = SGPA of I Semester
$(Cr)_I$ = Total Credits for I Semester
$(\text{SGPA})_{II}$ = SGPA of II Semester
$(Cr)_{II}$ = Total Credits for II Semester

CGPA equal to 6.00 and above shall be considered as equivalent to First Class which shall be mentioned on Grade Card of II Semester as a foot note.

TABLE II

THEORY

Grade	Percentage of Marks	Grade Points
AA	$80 \leq \text{Marks} \leq 100$	10
AB	$70 \leq \text{Marks} < 80$	9
BB	$60 \leq \text{Marks} < 70$	8
BC	$55 \leq \text{Marks} < 60$	7
CC	$50 \leq \text{Marks} < 55$	6
CD	$45 \leq \text{Marks} < 50$	5
DD	$40 \leq \text{Marks} < 45$	4
FF	$00 \leq \text{Marks} < 40$	0
ZZ	Absent in Examination	—

PRACTICAL

Grade	Percentage of Marks	Grade Points
AA	$85 \leq \text{Marks} \leq 100$	10
AB	$80 \leq \text{Marks} < 85$	9
BB	$75 \leq \text{Marks} < 80$	8
BC	$70 \leq \text{Marks} < 75$	7
CC	$65 \leq \text{Marks} < 70$	6
CD	$60 \leq \text{Marks} < 65$	5
DD	$50 \leq \text{Marks} < 60$	4
FF	$00 \leq \text{Marks} < 50$	0
ZZ	Absent in Examination	—

12. (i) Scope of the subjects shall be as indicated in the syllabus.
(ii) Medium of instruction and examination shall be English.

13. Provisions of Ordinance No.18 of 2001 in respect of an Ordinance to provide grace marks for passing in a Head of passing and improvement of Division (Higher Class) and getting distinction in the subject and condonation of deficiency of marks in a subject in all the faculties prescribed by the Statute No.18, Ordinance, 2001 shall apply to each examination under this Direction.

14. An examinee who does not pass or who fails to present himself/ herself for the examination shall be eligible for readmission to the same examination on payment of fresh fees and such othe fees as may be prescribed.

15. As soon as possible after the examination, the Board of Examinations shall publish a result of the examinees. The result of the examinations shall be classified as above and merit list shall be notified as per Ordiance No. 6

16. Notwistanding anything to the contary in this Direction no one shall be admitted to an examination under this Direction, if he/she has already passed the same examination or an equivalent examination of any Statutory University.

17. Examinees who have passed in all the subject prescribed for Part-I and Part-II of the examination of the Diploma course shall be eligible for award of the Post-Graduate Diploma in Computer Science (One Year).

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Sd/-
Dr. Kamal Singh
Vice-Chancellor

APPENDIX-A
ONE YEAR POST GRADUATE DIPLOMA COURSE IN COMPUTER SCIENCE
SEMESTER PATTERN
CREDIT GRADE SYSTEM
SEMESTER-I

Sr.No.	Subject Code	Subject	Teaching Scheme Hours/Week						Examination Scheme							
									Theory				Practical		Total Marks	Min. Passing Marks
			Lecture	Tutorial	P/D	Total Hours/Week	Credits	Duration of Paper (Hr.)	Max. Marks Theory Paper	Max. Marks College Assessment	Total	Min. Passing Marks	Max. Marks External	Internal		
1	ICS1/ IMCA1	Computer Organization	4	0	0	4	4	3	80	20	100	40	—	—	—	—
2	ICS2/ IMCA2	Problem Solving Using C++	4	0	0	4	4	3	80	20	100	40	—	—	—	—
3	ICS3/ IMCA3	Computer Oriented Statistical Methods	4	0	0	4	4	3	80	20	100	40	—	—	—	—
4	ICS4/ IMCA4	Principles of Management	4	0	0	4	4	3	80	20	100	40	—	—	—	—
5	ICS5/ IMCA5	Communication Skills	4	0	0	4	4	3	80	20	100	40	—	—	—	—
6	ICS6/ IMCA6	Problem Solving Using C++-Lab.	0	0	2	2	1	—	—	—	—	—	25	25	50	25
7	ICS7/ IMCA7	Computer Oriented Statistical Methods-Lab	0	0	2	2	1	—	—	—	—	—	25	25	50	25
8	ICS8/ IMCA8	Communication Skills-Lab.	0	0	2	2	1	—	—	—	—	—	25	25	50	25
9	ICS8/ IMCA9	Computer Lab-I	0	0	4	4	2	—	—	—	—	—	50	50	100	50
	TOTAL		20	0	10	30	25				500				250	

TOTAL : 750

APPENDIX-A
ONE YEAR POST GRADUATE DIPLOMA COURSE IN COMPUTER SCIENCE
SEMESTER PATTERN
CREDIT GRADE SYSTEM
SEMESTER-II

Sr.No.	Subject Code	Subject	Teaching Scheme Hours/Week				Credits (Hr.)	Examination Scheme								
								Theory					Practical			
			Lecture	Tutorial	P/D	Total Hours/Week	Credits	Duration of Paper (Hr.)	Max. Marks Theory Paper	Max. Marks College Assessment	Total	Min.Passing Marks	Max.Marks External	Internal	Total	Min. Passing Marks
1	2CS1/2MCA1	Data Structure & Algorithms	4	0	0	4	4	3	80	20	100	40	–	–	–	–
2	2CS2/2MCA2	Object Oriented Programming	4	0	0	4	4	3	80	20	100	40	–	–	–	–
3	2CS3/2MCA3	System Analysis & Design	4	0	0	4	4	3	80	20	100	40	–	–	–	–
4	2CS4/2MCA4	Data Communication	4	0	0	4	4	3	80	20	100	40	–	–	–	–
5	2CS5	Business Computing	4	0	0	4	4	3	80	20	100	40	–	–	–	–
6	2CS6/2MCA6 -Lab	Data Structure & Algorithms	0	0	2	2	1	–	–	–	–	–	25	25	50	25
7	2CS7/2MCA7 -Lab	Object Oriented Programming	0	0	2	2	1	–	–	–	–	–	25	25	50	25
8	2CS8/2MCA8 -Lab	System Analysis & Design	0	0	2	2	1	–	–	–	–	–	25	25	50	25
9	2CS9	Business Computing--Lab	0	0	4	4	1	–	–	–	–	–	25	25	50	25
10	2CS10	Project	0	0	4	4	10	–	–	–	–	–	50	50	100	50
	TOTAL		20	0	12	32	34				500				300	

TOTAL : 800