डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्यासक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधीतांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमांत किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

..2..

S-29 Nov., 2013 AC after Circulars from Cirular No.55 & onwards

:: [2] ::

[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
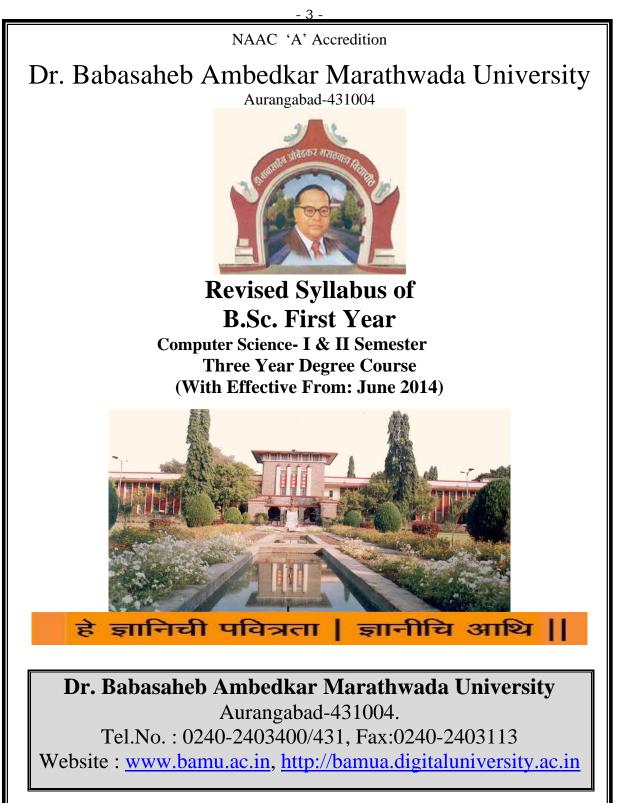संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-
१) मा. परिक्षा नियंत्रक, परिक्षा विभाग,

२) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,

३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थंळावर उपलब्ध करुण देण्यात यावेत.

४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,

५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,

६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,

७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,

८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

NAAC 'A' Accredition

Dr. Babasaheb Ambedkar Marathwada University
Aurangabad-431004

Revised Syllabus of
B.Sc. First Year
Computer Science- I & II Semester
Three Year Degree Course
(With Effective From: June 2014)

हे ज्ञानिची पवित्रता | ज्ञानीचि आथि ||

Dr. Babasaheb Ambedkar Marathwada University
Aurangabad-431004.
Tel.No. : 0240-2403400/431, Fax:0240-2403113
Website : www.bamu.ac.in, http://bamua.digitaluniversity.ac.in

Dr. Babasaheb Ambedkar Marathwada University.
Appendix 'A'

A Candidate shall be admitted to the I year of the B.Sc. (Computer Science) degree course only if he/she satisfies the following condition:

1. He/ She must have passed the higher secondary (multipurpose) examination conducted by H.S.C. board Government of Maharashtra with science / technical subjects Or an Examination of any statutory University and Board recognized as equivalent thereto.

   OR

   He/She must have passed examination prescribed at the end of second year of the junior college conducted by the H.S.C. board, Government of Maharashtra with English, Second language, Physics, Chemistry, Mathematics and or Biology or one of the technical subjects prescribed at the said examination as the optional or elective subjects or an examination recognized as equivalent thereto.

   OR

   Candidate having offered prescribed vocational course (MCVC) with Computer techniques/I.T./Electronics.

   OR

   Three years Diploma Course in engineering conducted by the board of technical Education, Maharashtra State.

2. He/ She must have passed at qualifying examination.

A candidate who has passed the B.Sc.(Computer Science) examination of this university may be allowed to present himself subsequently at the degree examination in a subject or subjects other than those he has taken earlier provided that he puts in three years of attendance as a regular candidate for First, Second and Third year in the subject or subjects concerned excluding compulsory English, Second Language and remaining optional subject(s).

A candidate shall not be allowed to appear for such examination if he has passed the higher examination.

The Degree of Bachelor of Science (Computer Science) shall be conferred on candidate who has pursued a regular course of study consisting of six semesters in the relevant subject as prescribed and has appeared at the end examination and passed under the credit based system in all the examination prescribed for the Degree course in the faculty.

The pattern of the examination and the scope is indicated in the syllabus.[Annexure B]

The Number of students in a theory class shall not exceed 60.

Maximum number of students in a batch for practicals in first four semesters shall consist of 20 students and for fifth & sixth semester the batch shall consist of 15 students.

The rules for admission to the subsequent (next) semesters will be the same as per the University guidelines.

For Each course the concerned teacher will have to conduct Class tests after completion of 15 and 20 lectures. The mark list of the same is to be submitted to the university authority within 7 working days after the completion of class tests.

Final Examination will be conducted by the University based on the complete syllabus.

Final Practical Examination will be conducted by the university and examiners will submit the mars in the prescribed format of students for practical examination to the university.

The Number of Teaching Staff & infra-structure required to run the course will be as follow:-

The graduation is very important phase in the life of our young students. The college responsibly is not only to deliver a quality syllabus based education, but also to motivate them to be a good healthy citizen. In this direction, the college must have sufficient facilities to run the course. A guideline is listed below. The College must have following minimum facilities:

Infrastructure:

1. One Class room to accommodate 60 students. (approximately 250 sq.ft.)

2. A well equipped software Laboratory having a LAN system of 30 nodes and having internet connectivity with broad band. All legal software, antivirus software, firewall be available for smooth functioning of the laboratory.

3. A hardware laboratory having twenty microprocessor kits with add on cards as per their syllabus. Staff room of 100 sq.ft. with one table and one Almeria for each faculty member.

4. One office space of 100 sq.ft. with appropriate furniture.

5. One lady room of 100 sq.ft. with attached toilet.

6. One reading room of 200 sq.ft. with seating arrangements for at least 30 people. The library may be accommodated in the library.

7. One copy of every text book among five students for each subject be available along with one copy of reference book as per the syllabus.

8. Library must subscribe for computer and scientific magazines. Appropriate general reading materials must be available for overall development of students.

9. An open space for sports activities. The college must be encouraged to have sport equipments.

Staff:

1. The head of the department in the scale of reader/Professor.

2. The minimum number of teachers must be appointed as per the work load. Per semester, the work load may be computed on the basis of theory classes, tutorials and practical class per batch. Minimum number of teachers to run the course must be five excluding the head. Teachers must be appointed by the university/UGC norms. The quality of the course is directly related to quality of teachers for the course.

3. There must be one clerk in the office to look after administrative work. The placement of all staffs must be maintained properly.

4. One qualified librarian

   An appropriate number of class IV employees.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Curriculum Structure and Scheme of Evaluation: B.Sc.(C.S.)

Sr. No.	Paper Number	Name of the Paper Titles	Scheme of Teaching	Scheme of Evaluation(Marks)		
			Theory / Practical (hrs / week)	Theory / Practical (Marks)	Exam Duration (in hrs.)	Total Marks
I Semester						
1	CS101-T	Computer Fundamentals	3	50	2	50
2	CS102-T	Digital Electronics	3	50	2	50
3	CS103-T	Microprocessor - I	3	50	2	50
4	CS104-T	C Programming – I	3	50	2	50
5	CS105-T	Communication Skill – I	3	50	2	50
6	CS106-T	Mathematical Foundation	3	50	2	50
7	CS107-P	Office Suite	4	50	2	50
8	CS108-P	Digital Electronics	4	50	2	50
9	CS109-P	Microprocessor – I	4	50	2	50
10	CS110-P	C Programming – I	4	50	2	50
II Semester						
1	CS201-T	Data Structure	3	50	2	50
2	CS202-T	Operating System	3	50	2	50
3	CS203-T	Microprocessor – II	3	50	2	50
4	CS204-T	C Programming – II	3	50	2	50
5	CS205-T	Communication Skill – II	3	50	2	50
6	CS206-T	Numerical Computation Methods	3	50	2	50
7	CS207-P	Data Structure	4	50	2	50
8	CS208-P	Microprocessor – II	4	50	2	50
9	CS209-P	C Programming – II	4	50	2	50
10	CS210-P	Numerical Computation Methods	4	50	2	50

PATTERN OF QUESTION PAPERS

Note : 1) All questions carry equal marks.

2) All questions are compulsory.

Q. No.	Format	Marks
1.	Multiple Choice/Fill in the blank/Match the pair/ one line answer. 1) 2) • • 10)	1 x 10 = 10
2.	a) b) OR a)	5 * 2 =10 10
3.	a) b) OR a)	5 * 2 =10 10
4.	a) b) OR a)	5 * 2 =10 10
5.	Write Short Notes On: (Any Two) a) b) c)	5 * 2 =10
	Total	**50**

* Not More than 3 bits should be asked in each question of 10 Marks.

(Only for Paper Setter)

B.Sc. (Computer Science)

Semester I

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50

Paper Title: Computer Fundamentals   **Paper No. :** CS101-T

UNIT – 1

1. Fundamentals of Computer System
- Characteristics & features of Computers.
- Components of Computers.
- Organization of Computer.

2. Algorithm and Flowcharts
- Algorithm : Definition , Characteristics , Advantages and disadvantages , Examples
- Flowchart : Definition , Define symbols of flowchart , Advantages and disadvantages , Examples

3. Computer Generation & Classification
- Generation of Computers : First to Fifth
- Classification of Computers : Distributed & Parallel computers

UNIT – II

4. Computer Languages
- Types of Programming Languages : Machine Languages , Assembly Languages, High Level Languages
- Assembler, Linker, Loader, Interpreter & Compiler.

5. Computer Memory
- Memory Cell & Organization
- Types of Memory (Primary And Secondary) : RAM , ROM , PROM , EPROM
- Secondary Storage Devices (FD, CD, HD, Pendrive, DVD, Tape Drive, DAT)

6. I/O Devices
- Input Devices : Touch screen , OMR, OBR , OCR, Light pen ,Scanners
- Output Devices: Digitizers, Plotters, LCD, Plasma Display, Printers

UNIT – III

7. Processor
- Structure of Instruction , Description of Processor , Processor Features
- RISC & CISC

8. Operating system Concepts
- Why Operating System?, Functions of Operating System , Booting of OS & it's type
- Types of Operating System : Batch O.S. , Multiprogramming O.S., Time Sharing O.S , Personal Computers O.S. , Network O.S.

Text Books:

1. Fundamentals of Information Technology; By Chetan Srivastava, Kalyani Publishers
2. Fundamentals of Computers: By V.Rajaraman, PHI Publication , IVth Edition.
3. Fundamentals of Programming: By Raj K.Jain, S.Chand Publication

Reference Books:

1. Computer Fundamental By B.Ram, BPB Publication.

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50

Paper Title: Digital Electronics   **Paper No. :** CS102-T

UNIT – 1

1. **Number Systems and Arithmetic**
   - Number System : Decimal , Octal , Hexadecimal & Binary Number System
   - Conversion within Binary, Octal, Hexadecimal & Decimal Number System.
   - Binary Arithmetic : Binary addition, subtraction, multiplication & division
   - Binary subtraction using 1' complement, 2's complement method.
   - Hexadecimal arithmetic: Addition, subtraction, multiplication & division

2. **Boolean Algebra and Logic Gates**
   - Postulates of Boolean Algebra
   - Theorems of Boolean Algebra: Complementation , commutative, AND, OR, Associative, Distributive, Absorption laws , De morgan's theorems
   - Reducing Boolean expressions
   - Logic Gates : AND, OR, NOT, Ex-OR, Ex-NOR
   - NAND as Universal building block
   - Logic diagrams of Boolean expressions Boolean expressions for logic diagrams

Unit – II

3. **Minimization Techniques**
   - Introduction , Minterms and Maxterms
   - K-Map, K-map for 2 variables
   - K-map for 3 variables
   - K-map for 4 variables

4. **Combinational and Arithmetic Logic Circuits**
   - Half Adder & Full Adder
   - Binary parallel Adder
   - Half Subtractor, Full Subtractor
   - Adder/Subtractor in 2's complement system
   - BCD to Decimal decoder
   - 2 : 4 demultiplexer
   - 4 line to 1 line multiplexer

Unit – III

5. **Flip Flops**
   - Introduction : RS FF
   - Clocked RS FF, D FF
   - Triggering, preset and clear
   - JK FF , T FF , Race around condition

- Master slave FF

6. Counters
- Introduction : Asynchronous/ ripple counter
- Modulus Counter , MOD-12 counter
- Synchronous counter : Synchronous serial & synch parallel counter
- BCD counter
- Ring counter

7. Shift Registers
- Introduction, Buffer register
- Serial- in serial -out Serial-in parallel-out
- Parallel-in serial-out, parallel-in parallel-out

Text Book:

1. Digital Electronics and Micro-Computers – R.K.Gaur , Dhanpat Rai Publication

Reference Book:

1. Digital Electronics and Logic Design – N.G.Palan, Technova Publication

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50

Paper Title: Micro processor - I   **Paper No. :** CS103-T

UNIT – I

1. Introduction to Microprocessor and Microcomputer

- Historical background
- Microprocessor based personal computer system
- Computer data formats

2. 8086 Hardware specification

- Microcomputer structure and operation
- 8086 internal architecture ,
- Real Mode & Protected Mode Memory Addressing, Memory Paging.
- Introduction to programming 8086 : Prog.lang.

UNIT – II

3. Addressing Modes

- Data addressing modes
- Program memory addressing modes
- Stack memory addressing modes

4. Data Movement Instructions (Inst.related with 8086 only)

- MOV revisited: Machine language,the op-code, MOD field, resister assignment,R/M memory addressing,special addr.mode

UNIT – III

5. Data Movement Instructions (..)

- PUSH/POP, initializing stack.
- Miscellaneous data transfer instructions: XCHG, LAHF & SAHF

6. Arithmetic instructions

- Addition, subtraction and comparison
- Multiplication and division
- BCD and ASCII arithmetic

Text Books:

1. The Intel Microprocessors: Architecture, programming and interfacing –

By Barry B. Brey

2. Microprocessors and Interfacing : Douglas Hall.

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50

Paper Title: 'C' Programming - I   **Paper No. :** CS104-T

UNIT – I

1. Introduction :
   a. An Overview of C , History of C language, C as a Structured Language, Features of C.

2. Basic Elements & Operators
   - Character set, C Token, Identifier & Keywords, Variables
   - Constant and its types. Integer constant, floating point constant, character constant, string constants.
   - Operators: Arithmetic, Relational, Logical, Unary operators: Increment & decrement Assignment and Conditional operator.
   - Precedence & Associatively of Operators

3. Data Types
   - Data Types: *int, char, float, double*. Declaration & Initialization.
   - Type modifier: long, short, signed & unsigned

UNIT – II

4. C Program & I/O statements
   - Structure of C Program, Compilation & Execution of C program
   - I/O: Introduction, Formatted Input/Output function: *scanf & printf*, Escape sequence characters.
   - Library functions: General & Maths.

5. Control and Iterative Statements :
   - Simple if, nested if, if-else, else if ladder
   - Switch-case statement
   - The conditional expression (? : operator)
   - *while* and *do-while* loop, and *for* loop
   - *break* & *continue* statement, *goto* statement

UNIT – III

6. Arrays:
   - Introduction, Declaration and initialization Accessing array elements, Memory representation of array.
   - One dimension and multidimensional arrays, character array, Introduction to string.

Text Books::
   1.   Let us C   : Y.P. Kanetkar   [bpb publication]
   2.   Programming in C   : E. Balaburuswamy   [Tata macgraw hill]
   3.   Programming in C   : Goterfried   [Shaums' Series]

Reference Books:

1.   Spirit of "C"   : Moolish Kooper.

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50

Paper Title: Communication Skill- 1   **Paper No. :** CS105-T

UNIT – I

1. Introduction to Communication

Importance of Communication, Definition of Communication
Elements of Communication, Communication process

2. Types of Communication

Upward Communication, Downward Communication
Horizontal Communication

3. Method of Communication : Verbal , Oral , Written

UNIT – II

4. Written Communication

Punctuation marks.
Grammar: Parts of Speech, tenses,
vocabulary building, constructing para.
'C's of good communication
Language of business writing

5. Oral Communication

Speeches and Presentation
Dialogues

UNIT – III (English Language Lab)

6. Listening Comprehension

Listening and typing – Listening and sequencing
of sentences .

7. Reading Comprehension and Vocabulary

Filling in the blanks - Cloze Exercises –
Vocabulary building –
Reading and answering questions.

8. Speaking

a.   Phonetics**:** Intonation – Ear Training – Correct
Pronunciation – Sound recognition exercises -
Common Errors in English
b.   Conversations: Face to Face Conversation -
Telephone conversation –

Text Books

1. Business Communication , By urmila Rai & S.M.Rai. Himalaya Pub.

2. Communication Skill for Effective Management By Dr.Anjali Ghanekar. Everest Pub. House.

3. Developing Communication Skill By Krishna Mohan, Meera Banerji. McMillan

Course : B.Sc.(C.S.) I Seme.	**Max. Marks :** 50
Paper Title: Mathematical Foundation	**Paper No. :** CS106-T

UNIT – I

1. Set Theory-
- **Basic Definitions:** Set, Finite set, Infinite set, Singleton Set, Empty set, Subset, Proper Subset, Universal set, Power set, Venn diagram ,
- **Operations on set:** Union of sets, Intersection of Sets, Complement of a set, Equality of two sets, Disjoint sets, Difference of two sets, Symmetric Difference, Cartesian Product; explanation of each using Venn-diagram and simple examples. Principle of Inclusion and Exclusion.
- **Algebraic Properties of Set**: Statement and proof of Commutative Laws, Associative Laws, Distributive Laws, Idempotent Laws, Properties of Compliment, Principle of Duality.

UNIT – II

2. Graph Theory:
- **Introduction:** Graph Definition & Terminologies, Application of Graph, Finite & Infinite Graphs, Incidence and Degree, Isolated Vertex, Pendant Vertex and Null Graph.
- **Matrix Representation of Graph:** Incidence & Adjacency Matrix.
- **Path & Circuits:** Isomorphism, Subgraphs, Walks, Paths and Circuits, Connected Graphs, Disconnected Graphs and Components, Euler Graphs.
- **Operations on Graph:** Union, Intersection & Ring Sum.
- **Directed Graph :** Definition, Types of Directed Graph, Directed Path & Connectedness.

UNIT – III

3. Relation and Function
- **Introduction:** Binary Relation, Tabular Form, Graphical Form, Ternary Relation, Quaternary Relation.
- **Properties of Binary Relations:** Reflexive Relation, Symmetric Relation, Antisymmetric Relation, Transitive Relation, Equivalence Relation.
- **Function :** Introduction, Function Mapping, Types of Functions: 1:1 , 1:M

4. Boolean Algebra
- Finite Boolean Algebra, Boolean Expression, Boolean Function.
- Disjunctive Normal Form & Simplification.

Text Books:
1. "Discrete Mathematical Structures" by Bernard Kolman, Robert C. Busby,Sharon Cutler Ross, Pearson Education Asia.
2. "Elements of Discrete Mathematics" by C.L. Liu, Tata McGraw-Hill
3. "Discrete Mathematics" by Dr. Bembalkar.
4. "Graph Theory" by Narsingh Deo

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50
Paper Title: Office Suite   **Paper No. :** CS107-P

- **GUI Operating System**   : Mouse Practice, Starting, Login, Shutdown, Exploring Directories, Resizing, Moving, Minimizing, closing of software windows, familiarization with file icons, Launching Applications, Deleting, Renaming files, Managing Directories, Searching for files, Using Accessories.

- **Web Browser:** Basic Browsing, Buttons: forward, backward, home, adding to favorites, stop, save, save as, Saving an Image from the Web, printing, Specifying a Home Page, **Browsing**: Using Web URLs, Anatomy of a URL, Membership Websites: Signing up for email service, **Searching:** Academic Search on the web**.**

- **Word Processing Tool**: Menus, Shortcut menus, Toolbars, Customizing toolbars, Creating and opening documents, Saving documents, Renaming documents, Working on multiple documents, Close a document ; **Working With Text** :Typing and inserting text, Selecting text, Deleting text, Undo, Formatting toolbar, Format Painter, Formatting Paragraphs: Paragraph attributes, Moving, copying, and pasting text, The clipboard, Columns, Drop caps; **Styles** : Apply a style, Apply a style from the style dialog box, Create a new styles from a model, Create a simple style from the style dialog box, Modify or rename a style, Delete a style; **Lists** : Bulleted and numbered lists, Nested lists, Formatting lists **Tables** :Insert Table button, Draw a table, Inserting rows and columns, Moving and resizing a table, Tables and Borders toolbar, Table properties **Graphics** :Adding clip art, Add an image from a file, Editing a graphic, AutoShapes; **Spelling and Grammar**: AutoCorrect, Spelling and grammar check, Synonyms, Thesaurus; **Page Formatting**: Page margins, Page size and orientation, Headers and footers, Page numbers, Print preview and printing.

- **Spreadsheet Basics**: Screen elements, Adding and renaming worksheets, The standard toolbar - opening, closing, saving, and more; **Modifying A Worksheet**, Moving through cells, Adding worksheets, rows, and columns, Resizing rows and columns, Selecting cells, Moving and copying cells,, Freeze panes; **Formatting Cells:** Formatting toolbar, Format Cells dialog box, Dates and times; **Formulas and Functions:** Formulas, Linking worksheets, Relative, absolute, and mixed referencing, Basic functions, Function Wizard, Autosum, **Sorting and Filling:** Basic ascending and descending sorts, Complex sorts, Autofill; Alternating text and numbers with Autofill, Autofilling functions; Graphics; Adding clip art; Add an image from a file; Editing a graphics; AutoShapes; **Charts:** Chart Wizard; Resizing a chart; Moving a chart, Chart formatting toolbar; **Page Properties and Printing:** Page breaks, Page orientation, Margins, Headers, footers, and page numbers, Print Preview, Print; Keyboard Shortcuts.

- **Presentation Tool**: AutoContent Wizard, Create a presentation from a template, Create a blank presentation, Open an existing presentation, AutoLayout, Presentation Screen: Screen layout, Views, Working with Slides: Insert a new slide, Applying a design template, Changing slide layouts, Reordering slides, Hide slides, Create a custom slide show, Edit a custom slide show Adding Content: Resizing a text box, Text box properties, Delete a text box, Bulleted lists, Numbered lists, Adding notes, Video and Audio Working with Text: Adding text, Editing options, Formatting text, Replace fonts, Line spacing, Change case Spelling check   Color & Background: Color schemes, Backgrounds, Graphics, Adding clip art, Adding an image from a file, Editing a graphic, AutoShapes, WordArt Slide Effects: Action buttons, Slide animation, Animation preview, Slide transitions, Slide show options, Master Slides, Slide master, Header and footer, Slide numbers, Date and time Saving and Printing, Save as a web page, Page setup, Print

- **Integrating Programs** Word, spreadsheet and Presentation.

Note:

> The above practical is to be conducted using the either Microsoft-Office or OpenOffice.

Course : B.Sc.(C.S.) I Seme.　　　　　　　　**Max. Marks :** 50

Paper Title: Digital Electronics　　　　　　**Paper No. :** CS108-P

Instruction: The Laboratory work will have to be performed during the semester consisting of any of the **8** experiments from the given list below***:***

List of Experiments:

1. Study and Testing of measuring instruments: Digital and Analog multimeters, CROs and Signal Generators – measurement of AC & DC voltages, measurement of frequency.

2. Study of Components: Identification and testing of resistors, capacitors, inductors, diodes, LEDs & transistors

3. Study of Logic Gates: Study of truth table of basic gates, realization of Boolean functions

4. Study of Half adder and Full Adder

5. Study of Half Subtractor and Full Subtractor

6. Study of Implementation of a 3:8 decoder,

7. Study of 4-line to 16 bit decoder

8. Study of BCD to 7-segment decoder

9. Study of Generating a Boolean expression with a multiplexer

10. Study of Clocked JK Flip Flop

11. Study of 4-bit ripple counter

12. Study of Parallel-in, serial-out, 4-bit shift register

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50
Paper Title: Micro Processor - I   **Paper No. :** CS109-P

List of Experiments:

1. Addition and subtraction of two 8-bit numbers with programs based on different Addressing modes of 8086.
2. Addition and subtraction of two 16-bit numbers. (Using 2's complement method, also programs which access numbers from specified memory locations)
3. Multiplication of two 8-bit numbers using the method of successive addition and Shift & add.
4. Division of two 8-bit numbers using the method of successive subtraction and shift & subtract.
5. Block transfer and block exchange of data bytes.

Course : B.Sc.(C.S.) I Seme.   **Max. Marks :** 50
Paper Title: 'C' Programming   **Paper No. :** CS110-P

List of Experiments:

1. Find Area, Perimeter of Triangle & Rectangle.

2. Find maximum amongst 3 numbers.

3. Program for nested loops.

4. Program to Calculate x^y

5. Program to check Prime Number, Program reverse of digit.

6. Program to find Armstrong Number.

7. Program to print the Fibonacci Series

8. Searching and element from array.

9. Transpose of matrices

10. Multiplication of matrices

11. Sorting array using bubble sort technique

12. Program for factorial.

Note : Any other five program of faculty's interest.

B.Sc. (Computer Science)

Semester II

Course : B.Sc.(C.S.) II Seme.　　　　　　　　　　**Max. Marks :** 50
Paper Title: Data Structure　　　　　　　　　　**Paper No. :** CS201-T

UNIT – I

1. **Introduction to Data Structure:**
   - Basic Terminology : Data item, Fields, Records, Files, Entity, Attributes
   - Data Organization and Data Structure

2. **Arrays**
   - Representation of Linear Arrays
   - Traversing, Insertion and Deletions
   - Sorting & Searching Algorithms
   - Multidimensional Arrays : 2D & M-D Concept
   - Record: Record Structures, Representation in Memory

UNIT – II

3. **Linked List**
   - Concept of Linked List
   - Representation of linked List in memory
   - Traversing a linked list
   - Searching a linked list : sorted and unsorted
   - Insertion & Deletion in Linked List
   - Header Linked List & Two way List

UNIT – III

4. **Stacks, Queues , Recursion**
   - Stack: Operation , Array Representation of Stack, linked representation of stack, Arithmetic Expression POLISH & POSTFIX,
   - Application of stacks: Quicksort, Recursion.
   - Queue: Representation of queues & link.
   - Types of Queues : Deques & Priority Queues

Text Books:
   1. Data Structures : By Seymour Lipschutz, Tata Mcgraw- Hill Publication.

Reference Books:
   1. Fundamentals of Data structures, by Horowitz & Sahani (Galgotia pub).

2. An introduction to data structures and application, by Jean Paul Tremblay & Pal G. Sorenson (McGraw Hill).

3. Data Structures, by Tannenbaum, (PHI).

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: Operating System   **Paper No. :** CS202-T

UNIT – I

1. Process Management

- **Concept of Process**: Process State, Operation on Processes, thread.
- **CPU Scheduling** : Types of Schedulers, Criteria for scheduling, Scheduling Algorithms.
- **Process Synchronization:** Need for synchronization, Critical Section, Hardware Synchronization, Semaphores, Monitors, Problem of synchronization.
- **Deadlocks:** Concept of Deadlock, Deadlock Modeling, Methods for Handling Deadlock

UNIT – II

2. Storage Management

- **Memory Management**: Address Binding, Logical Vs. Physical Address space, Memory Allocation, Paging, Segmentation, Segmentation and paging of Intel Pentium.
- **Virtual Memory:** Demand Paging, Page replacement Algorithms (FIFO, Optimal, LRU), Virtual Memory in windowsXp.
- **File System Interface**: Files, File Access, Directory Structure, Protection.
- **Implementation of File System:** Allocation Methods, Free space Management

UNIT – III

3. Device Management

- **Introduction :** Dedicated Devices, Shared Device & Virtual Device
- **Device Characteristics:** Input and Output devices , Storage devices , Device allocations
- **Concept of I/O Traffic Controller:** I/O Scheduler, introduction to Virtual Devices.

4. Information Management

- Concept of File system
- Symbolic file system
- Access control verification
- Logical and physical file system

Text Books:

1. "Operating System", By S.R.Sathe & Anil S.Mokhade , MacMillan Publication.

2. "Operating System", By Stuart E.Madnick, John J.Donovan.

Reference Books:

1. Operating System Concepts- A. Silberzchaz & P.B. Galvin, Addison – Wesley Publishing Company.

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: Micro Processor - II   **Paper No. :** CS203-T

UNIT – I

1. **8086 Microprocessor: Logic instructions**

   - Basic logic Instructions: AND, OR, Exclusive-OR, NOT, NEG

   - Shift and rotate

2. **Program control Instructions**

   - The JUMP group Instruction: Conditional & Un-Conditional.

   - Procedures - CALL & RET

   - Controlling the Flow of an Assembly Language Program

     - Loops - WHILE, REPEAT UNTIL

   - Machine Control & Miscellaneous Instruction : WAIT, NOP, HALT, LOCK, ESC, ENTER, BOUND, LEAVE

UNIT – II

3. **Programming the Microprocessor**

   - **String Procedure & Macros**

   - **Modular Programming –** Assembler & linkers.

   - **Instructions –** AAA, AAD, AAM, AAS, ADC, ADD, SUB, MOV, DAA, DEC, DIV, ESC, HALT, INT, INC, INTO, JNZ, JZ, JMP, LOOP, LOOPZ, MUL, MOVS, POP, PUSH, RET, ROR, SBB, WAIT, XCHG.

UNIT – III

4. **Interrupts**

   - Basic Interrupt Processing, Hardware Interrupts, 8259 A Programmable interrupt Controller, Interrupt Examples.

5. **DMA & DMA Control I/O**

   - Basic DMA Operation, 8237 DMA Controller, Shared Bus Operation, Disk Memory Systems, Video Displays.

Text Books:

1. The Intel Microprocessors: Architecture, programming and interfacing –

                                        By Barry B. Brey

2. Microprocessors and Interfacing : Douglas Hall.

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50
Paper Title: 'C' Programming – II   **Paper No. :** CS204-T

UNIT – I
1. Functions
- Introduction, types of functions. Defining functions, Arguments, Function prototype, actual parameters and formal parameters, Calling function, Returning function results, Call by value, Recursion.

2. Structure & Union
- Structure: Introduction, Declaration and initializing structure, Accessing structure members, Nested structures, Arrays of structure, *typedef* statement.
- Unions: Declaration, Difference between structure and union

UNIT – II
3. Pointers:
- Introduction, Memory organization. Declaration and initialization of pointers. The pointer operator * and &, De-referencing, Pointer expression and pointer arithmetic, Pointer to pointer.

4. Storage Class & Library Functions:
- Storage classes, Scope, visibility and lifetime of variable, block and file scope, auto, extern, static and register storage classes.
- **String handling functions**: strcpy(), strcmp(), strcat(), strlen(), strupr(), strlwr(), gets(), puts()
- **Data conversion functions from stdlib.h**: atoi(), atol(), atof(), itoa(), ltoa(), random(), calloc(),malloc(),exit(), abs(), toupper(), tolower()

5. Preprocessor Directives:
- File inclusion and conditional compiler directives, Macro substitution, #define, #if, #ifdef, #else, #elif, #endif,

6. Miscellaneous Features:
- Bitwise Operators: Introduction, Masking, Internal representation of data, Bit fields, Enumerated data types, Type casting.

UNIT – III
7. File Handling
- **File handling**: Introduction, Opening & closing a file, Input/Output operations on files, text and binary files, getc(), putc() function. File

copy program, fprintf() and fscanf(). fread() and fwrite() function. Writing and reading records from binary file, Appending, modifying and deleting a record from file, Random access functions fseek(), rewind(), flushall(), remove(), rename().

Text Books:

1. Let us C Solutions   : Y.P. Kanetkar   [bpb publication]

2. Programming in C   : E. Balagurusamy. [Tata macgraw hill]

3. Programming in C   : Goterfried   [Shaums Series]

References Books:

1. Spirit of "C"   : Moolish Kooper.

2. Test your Skills in C   : Y.Kanetkar

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: Communication Skill-II   **Paper No. :** CS205-T

UNIT – I
1. Communication with Media
- Written media of Communication: Letters, Notices, Minutes, Manual, Leaflet, Complaints & Suggestion, Job Application.
- Visual Media of communication: slide presentation, Pictures & Photographs, Posters & Advertisement.
- Non-Verbal Media of Communication

2. Written Communication: Reports
- Types of Report, characteristics of Good Report , Essential Requisites of Good Report-Writing, Planning the Report, Outlining Issues for Analysis, Writing the Reports.

UNIT – II
3. Group Communication
- Problem of Group Communication- Meeting - types of meeting, Advantages & Disadvantages of Meeting, - Preparation for Meeting – conduct of a Meeting – Responsibility of participants.

4. Interview
- Purpose, Types of interviews – promotion, appraisal, exit, telephone.
- Employment or selection Interview : Candidate's preparation, Question commonly asked in interview, role of interviewer, Interviewer's preparation.

UNIT – III
5. Listening Comprehension
- Cassettes: "*Tiger's Eye*" Series.(vol. 1 & 2) , "*Twist in the Tail*"
- The Listening drill is to be given and question should be framed.

6. Reading Comprehension and Vocabulary
- Reading with proper pronunciation and ideal reading is to be recorded.

7. Speaking:
- **CIEFL'** Spoken English exercises part <u>one</u> and <u>two</u>.
- Drilling : Proper Pronunciation of word and sentences

Core Books
1. Business Communication,By urmila Rai & S.M.Rai. Himalaya Pub.(Tenth Ed.)
2. Communication Skill for Effective Management By Dr.Anjali Ghanekar. Everest Pub. House.

Note : 1. Teacher should demonstrate various format of concerned contents.
  2. For Report writing practice demonstrate IEEE paper Format.(http:// www.ieee.org/portal/cms_docs/pubs/confpubcenter/pdfs/samplems.pdf ,

http://www.ieee.org/portal/cms_docs_iportals/iportals/publications/journmag/trans actions/TRANS-JOUR.doc)

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50
Paper Title: Numerical Computation Methods   **Paper No. :** CS206-T

UNIT – I
1. Introduction
- Mathematical Modeling, Characteristics, Error in Calculation
- Significant Error , Absolute, Percentage Relative Error
- Chopping off and Rounding off Error.
- Truncation Error, Propagation Error.

2. Matrices and Determinants.
- Definitions, Matrix Operations
- Determinant of Square Matrix, Cofactor
- Adjoint of Matrix, Rank of Matrix

3. Numerical Solutions of Transcendental Equations
- Concept of Iterative Methods, Search Method for Initial Guess.
- Bisection Method
- False Position Method
- Newton-Raphson Method

UNIT – II
4. Elimination Methods for Solving Simultaneous Equations
- Introduction and Matrix Notation of set of Equations
- Gauss Elimination Method
- Gauss Seidal Method
- Matrix Inversion Method

5. Interpolation
- Introduction and Polynomial Interpolation
- Newton-Gregory Forward Difference Interpolation Formula
- Newton-Gregory Backward Difference Interpolation Formula

UNIT – III
6. Interpolation - II
- Newton's divided Difference Interpolation
- Lagrange's Interpolation

7. Least Square Curve Fitting
- Best Fit and Criteria for Best Fit and Least Square Fit.
- Linear Regression.

Text Books:

1. "Numerical Computational Methods" - Dr. P.B.Patil, Narosa Publication Hous.

Reference Books:

1. Numerical methods -S.C.Chapra, R.P.Canale-McGraw Hill

2. Numerical methods-E.Balguruswamy

Course : B.Sc.(C.S.) II Seme. **Max. Marks :** 50

Paper Title: Data Structure **Paper No. :** CS207-P

Assignments: Write the Program using C (if applicable) :

Data Structure:

1. Write a program using DIV(J,K) which reads a positive integer N>10 and determines whether or not N is a prime number.

2. Write a program which counts the number of particular character/word in the String.

3. Write a program which reads words WORD1 and WORD2 and then replaces each occurrence of word1 in text by word2

4. Write the programs for traversing of n item using the array.

5. Write the programs for insertion and deletion of n item using the array.

6. Implement Linear and binary search algorithm using C.

7. Implement Bubble sort using C.

8. Write the programs for traversing of n item from the linked list.

9. Write the programs for push and pop operation using the stacks.

10. Write the programs for insertion and deletion of n item from the queues.

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: Micro Processor - II   **Paper No. :** CS208-P

Any ten experiments from the list given below:

1. Addition and subtraction of two 8-bit numbers with programs based on different Addressing modes of 8086.

2. Addition and subtraction of two 16-bit numbers. (Using 2's complement method, also programs which access numbers from specified memory locations)

3. Multiplication of two 8-bit numbers using the method of successive addition and Shift & add.

4. Division of two 8-bit numbers using the method of successive subtraction and shift & subtract.

5. Block transfer and block exchange of data bytes.

6. Finding the smallest and largest element in a block of data.

7. Arranging the elements of a block of data in ascending and descending order.

8. Generating delays of different time intervals using delay subroutines and measurement of delay period on CRO using SOD pin of 8086.

9. Program for Summation of First n Number.

10. Program for Factorial of n.

11. Program for Addition of Array elements.

12. Program for Reversing the Array elements.

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: C Programming-II   **Paper No. :** CS209-P

1. Swapping of numbers by using call by reference
2. Program to pass array to function.
3. Program for passing structure pointer to function.
4. String manipulation function e.g. string copy, concatenation, compare, string length, reverse
5. Program for reading/writing text file.
6. Program for reading/writing binary file
7. Program for File copy program.
8. Program to modify a record from binary file
9. Program to delete a record from binary file
10. Program on conditional compiling
11. Program on macro substitution.
12. Program for data conversion
13. Program to demonstrate the storage class.
14. Program to sort names.

Course : B.Sc.(C.S.) II Seme.   **Max. Marks :** 50

Paper Title: Numerical Computational Method   **Paper No. :** CS210-P

1.   Program in C for representation of, Bisection Method

2.   Program in C for representation of, False Position Method

3.   Program in C for representation of, Newton-Raphson Method

4.   Program in C for representation of, Gauss Elimination Method

5.   Program in C for representation of, Matrix Inverse Method

6.   Program in C for representation of, Newton-Gregory Forward Difference Interpolation Formula

7.   Program in C for representation of, Newton-Gregory Backward Difference Interpolation Formula

8.   Program in C for representation of Newton's divided Difference Interpolation

9.   Program in C for representation of Lagrange's Interpolation

-=**=-

S*/-020614/-