Government College for Girls, Patiala

Program Outcomes (POs)

Program Outcomes are statements that describe what students are expected to know and be able to do upon graduating from the Program. These relate to the skills, knowledge, attitude and behavior that students acquire through the program.

Undergraduate

- Students will understand scientific, analytical, ethical and creative principles that strengthen their specific subject area.
- Students may become capable of applying their received holistic understanding for local, national, nearby and global needs.
- Courses will enhance the expert abilities and tender competencies of the students
- Students will be sensitized with knowledge and social skills to adapt to the converting social patterns.

Postgraduate

- Students will be capable of combining the specificity of their understanding with the knowledge and skills received from their chosen subject.
- Develop important and interpersonal ways of communication towards expert careers.
- Acquire a multidisciplinary technique to investigate and redefine, to create and innovate motifs within the entrepreneurial, employability and ability sector.
- Trained to undertake and adapt to the developing technology and new tendencies.
- Become morally upright and responsive citizens with a keen and an enhanced outlook.

DEPARTMENT OF MUSIC VOCAL

M.A. Music Vocal

M.A- (Music Vocal) - Semester- Ist
Session - 2022-2023 and 2023-24

Programme Code : MUVM2PUP

Course	Subject	Papers Cbcs systems Category	Papers	Code	Cre dits	External	Internal	Total Marks	(Hours/ Week) L+ T+ P
M.A	Music (Vocal)	Core- I	Scientific & Accoustical Study of Hindustani Music (Vocal).	MUVM1101 T	5	75	25	100	4+1+0
		Core- 2	History of Indian Music (Vocal)	MUVM1102 T	5	75	25	100	4+1+0
		Core-3	Stage Performance	MUVM1103P	5	75	25	100	0+3+2
		Core-4	Viva Voce	MUVM1104P	5	75	25	100	0+3+2
Total					20	300	100	400	20

M.A-(Music Vocal) Semester- II
Session -2022-2023 and 2023-2024

Course	Subject	Papers Cbcs systems Category	Papers	Code	Credit s	External	Internal	Total Marks	(Hours/ Week) L+ T+ P
M.A	Music (Vocal)	Core- I	Scientific & Accoustical Study of Hindustani Music (Vocal).	MUVM1 201T	5	75	25	100	4+1+0
		Core- 2	History of Indian Music (Vocal)	MUVM1 202T	5	75	25	100	4+1+0
		Core-3	Stage Performance	MUVM1 203P	5	75	25	100	0+3+2
		Core-4	Viva Voce	MUVM1 204P	5	75	25	100	0+3+2
Total					20	300	100	400	20

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Punjabi University Patiala
Department of Music
Syllabus
M.A. Part I : (Music Vocal) Semester I
For 2022--2023 & 2023-2024 Session
Outlines of tests

Program Specific Outcomes:

1. Post Graduation program in Music is a complete package of theoretical, academic, analytical, comparative and practical knowledge about various forms of Hindustanti Music .
2. It aims towards equipping the students with academic and professional expertise enabling them to engage themselves in an array of careers such as teaching and research in various institutions/academies, stage performance, playback singing, popular creative singing, studio recording and production and music criticism.

Paper I	Scientific & Accoustical Study of Hindustani Music (Vocal).
Paper II	History of Indian Music (Vocal)
Paper III	Stage Performance
Paper IV	Viva-Voce

Syllabus and courses of reading:

Paper I: Scientific & Accoustical Study of Hindustani Music (Vocal).

Time- 3 hrs.	Maximum Marks : 75
Pass Marks : 35%	Total Teaching Hours : 65
Internal Assessment: 25 Marks	Credits = 5

Objectives : The objective of this paper is to impart intense knowledge of scientific aspects and accoustics of Hindustani music, enabling students to explore Physics and other related aspects of the subject.

Course Outcomes :

1. Students get knowledge of various accoustical terms and accoustics of an auditorium.
2. Students gain knowledge about the origin and development of different musical scales, Swar Sthapna and importance of Notation system.
3. Students get an understanding about voice culture, correct intonation and various other techniques of vocal presentation.

Instructions for the paper-setter:

The question paper will consist of three sections : A, B & C. Section A &B will have 04 questions each from the respective sections of the syllabus and will carry 12 marks each. Section C is compulsory comprising of 09 short answers type

Prof. Nivedita Uppal
Chairperson, Department of Music
Punjabi University, Patiala

Itihasak Sarvekhan
Sangeet Chintamani : Acharya KCD Brahaspati

Paper - II : History of Indian Music (Vocal).

Time 3 hrs. Maximum Marks : 75
Pass Marks : 35% Total Teaching Hours : 65
Internal Assessment : 25 Marks Credits= 5

Objectives : The objective of the paper is to appraise the students with development of Indian Music from Vedic to Muslim period along with the treatises, Gharanas, various musical forms and prominent musicans.

Course Outcomes:

1. Students get knowledge about the historical development of Indian Music upto Mughal Period.
2. Students become familiar with contribution of prominent scholars and musicians.
3. They get an understanding about Gharana tradition and various Gayan Shailies .
4. Students also learn about contribution of Punjab to classical music and musical references mentioned in Shri Guru Granth Sahib.

Instructions for the paper-setter:

The question paper will consist of three sections : A, B & C. Section A &B will have 04 questions each from the respective sections of the syllabus and will carry 12 marks each. Section C is compulsory of 09 short answers type questions, covering the entire syllabus uniformly and will carry 27 (9x3) marks in all.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt two questions each from the sections A & B and the entire Section C is compulsory.

Section A

1. Development of Indian Music in the following periods:
   (i) Vedic Period (ii) Hindu Period (iii) Mughal Period

2. Life sketch and contribution of the following music scholars and musicians:

   (i) Pandit V.N.Bhatkhande (ii) Pandit V.D. Paluskar.
   (iii) Pt. Dilip Chander Vedi (iv) Pt. Bhimsen Joshi (v) Ustad Sohan Singh

3. Analytical Study of Musical references mentioned in Shri Guru Granth Sahib.

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Paper III Stage Performance (Music Vocal)

Total Teaching Hours : 90
Pass Marks : 35%

Maximum Marks : 75
Internal Assessment= 25 Marks
Credits =5

Objectives : The objective of the paper is to make student good stage performer covering all the aspects of Raag presentation, semi classical or light forms along with the primary knowledge of Taal.

Course Outcomes:

1. The students improve their capability to present a Raag with proper elaboration and all the technicalities of Gayaki.
2. They also develop ability to peform Tarana Gayan Shaili.
3. They also get chance to learn and present folk music of Punjab while playing harmonium.
4. Students learn various Taals in different Layakaries.

Instructions for the Examiners

The Examination will be conducted by a Board of Examiners consisting of Head of the Department/nominee, internal teacher and external expert as per decision of the Syndicate 25-10-91 (Para 2, 3).

Prescribed Raags:

Note: The Candidate has to choose one Raag out of the Raags prescribed in the paper-IV with Vilambit & Drut Khayal with proper elaboration & all the technicalities of Gayaki.

(A) Performance of Raag:
(i) Vilambit Khyal Marks: 25
(ii) Drut Khyal Marks: 15

(B) A Tarana in any Raag mentioned in Paper IV except the Raag selected for performance . Marks 15

(C) One folk song from Punjab Region while playing Harmonium. - Marks:10

(D) Demonstration of the following Taals on hand in Ekgun, Dugun and Chaugun Layakaries: Ek Taal, Teen Taal, Char Taal, Roopak. Marks: 10

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Paper - IV : Viva-Voce (Music Vocal)

Total Teaching Hours : 90 Maximum Marks : 75
Pass Marks : 35% Internal Assessment: 25 Marks
Credits=5

Objectives : The main aim of this paper is to introduce the student to analytical and comparative study of the Raags prescribed in the syllabus along with similar Raags. Also to equip them with compositons for further understanding and comparative study.

Course Outcomes:

1. The students learn various compositions in the prescribed Raags.
2. They learn to compare different aspects of the prescribed Raags and develop capability to analyse the Raags.
3. The students get equipped to demonstrate various features of the Raags in the course practically and orally.

Instructions for the Examiners

The Examination will be conducted by a Board of Examiners consisting of Head of the department/nominee, internal teacher and external expert as per decision of the Syndicate 25-10-91 (Para 2, 3).

From the following Raags, one Vilambit Khyal is compulsory, other than the Raag selected for Stage-performance. Drut Khyals have to be done in all the Raags. Marks should be awarded on the basis of performance and viva-voce.

Rageshri , Ahir Bhairav , Puriya Dhanashri, Bhimplasi, Alhaiya Bilawal, Bihag

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Jyoti Sharma

MA Part -1 (Music Vocal), Semester- II
2022-2023 & 2023-2024 session
Outlines of tests

Paper I	Scientific & Accoustical Study of Hindustani Music.
Paper II	History of Indian Music .
Paper III	Stage Performance .
Paper IV	Viva-Voce .

Syllabus and courses of reading:

Paper I : Scientific & Accoustical Study of Hindustani Music (Vocal) .

Time 3 hrs. Maximum Marks : 75 Pass
Marks : 35% Total Teaching Hours : 65
Internal Assessment: 25 Marks Credits=5

Objectives : The objective of this paper is to impart intense knowledge of Scientific aspects and accoustics of Hindustani music, enabling students to explore Physics and other related aspects of the subject.

Course Outcomes:

1. The students get knowledge about the various accoustical terms along with studio recording techniques.
2. They get in depth understanding of the concepts of Shruti, Swar, Samvad, Moorchhna, Melody, Harmony and comparative study of Hindustani and Karnatak systems of Music.
3. The students learn about usage of electronic gadgets in musical presentation.

Instructions for the paper-setter:

The question paper will consist of three sections : A, B & C. Section A &B will have 04 questions each from the respective sections of the syllabus and will carry 12 marks each. Section C is compulsory of 09 short answers type questions, covering the entire syllabus uniformly and will carry 27 (9x3) marks in all.

INSTRUCTIONS FROR THE CANDIDATES

Candidates are required to attempt two questions each from the sections A & B and the entire Section C is compulsory.

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Paper- II : History of Indian Music (Vocal)

Time 3 hrs. Maximum Marks : 75
Pass Marks : 35% Total Teaching Hours : 65
Internal Assessment : 25 Marks Credits=5

Objectives : The objective of the paper is to appraise the students with development of Indian Music from British to Post- independence period along with the treatises, Gharanas , various musical forms and prominent musicans.

Course Outcomes:

1. The students get knowledge about the development of Indian Music in British and Post- Independence Eras.
2. The students get familiar with contribution of prominent musicians and royal patrons.
3. They get an advanced understanding of Gharanass tradition and various Gayan Shailies along with Gharanasss of Punjab.

Instructions for the paper-setter

The question paper will consist of three sections : A, B & C. Section A &B will have 04 questions each from the respective sections of the syllabus and will carry 12 marks each. Section C is compulsory of 09 short answers type questions, covering the entire syllabus uniformly and will carry 27 (9x3) marks in all.

INSTRUCTIONS FROR THE CANDIDATES

Candidates are required to attempt two questions each from the sections A & B and the entire Section C is compulsory.

Section – A

1. Development of Indian music in the following periods:
   (i) British Period (ii) Post-independence Era

2. Life sketch and contribution of the following scholars and musicians:
   (i) Ustad Amir Khan (ii) Ustad Bade Gulam Ali Khan
   (iii) Prof. Tara Singh (iv) Pandit Onkar Nath Thakaur
   (v) Acharya Brihaspati

3. Contribution of the following royal patrons in the development of Indian Music:
   (i) Allauddin Khilji (ii) Maan Singh Tomar

Paper III Stage Performance (Music Vocal)

Total Teaching Hours : 90 Maximum Marks : 75
Pass Marks : 35% Internal Assessment 25 Marks
Credits=5

Objectives : The objective of the paper is to make student good stage performer covering all the aspects of Raag presentation, Dhrupad Gayan and devotional forms along with the primary knowledge of Taal.

Course Outcomes:

1. The students improve their capability to present a Raag with proper elaboration and all the technicalities of Gayaki.
2. They also develop ability to present lesser heard Dhrupad Gayaki and devotional forms Bhajan and Shabad.
3. The students learn various Taals in different Layakaries.

Instruction for the Examiners

The Examination will be conducted by a Board of Examiners consisting of Head of the Department/nominee, internal teacher and external expert as per decision of the Syndicate 25-10-91 (Para 2, 3).

Prescribed Raags:

Note : The candidate has to choose one Raag out of the Raags prescribed in Paper-IV with Vilambit and Drut khyals, proper elaboration and all the technicalities of gayan.

(A) **Performance of Raag:**
(i) Vilambit Khyal Marks 25
(ii) Drut Khayal Marks 15

(B) Dhrupad in any one Raag prescribed in paper IV except the Raag selected for the stage performance Marks 15

(C) A Raag based Bhajan or a Shabad in Raag as prescribed in Sri Guru Granth Sahib while playing Harmonium Marks 10

(D) Demonstration of the following Taals on hand in Ekgun, Dugun and Chaugun Layakaries: Jhap Taal, Jat, Deepchandi and Tivra. Marks 10

Paper - IV : Viva-Voce Music (Vocal)

Total Teaching Hours : 90 Maximum Marks : 75
Pass Marks : 35% Internal Assessment : 25 Marks
Credits=5

Objectives : The main aim of this paper is to introduce the student to analytical and comparative study of the Raags prescribed in the syllabus along with similar Raags. Also to equip them with compositons for further understanding and comparative study.

Course Outcomes:

1. The students learn various compositions in the prescribed Raags.
2. They learn to campare different aspects of the prescribed Raags and develop capability to analyse the Raags.
3. The students get equipped to demonstrate various features of the Raags in the course practically and orally.

Instructions for the Examiners

The Examination will be conducted by a Board of Examiners consisting of Head of the department/nominee, internal teacher and external expert as per decision of the Syndicate 25-10-91 (Para 2, 3).

From the following Ragas one Vilambit Khyal is compulsory, other than the Raag selected for Stage-performance. Drut Khyals have to be done in all the Raags. Marks should be awarded on the basis of performance and viva-voce.

Shudh Sarang, Darbari Kanhra, Bairagi, Chandra Kauns, Kalavati and Mian Ki Todi.

Prof. Nivedita Uppal
Head, Dept. of Music
Punjabi University, Patiala

Jyoti Sharma

DEPARTMENT OF COMPUTER SCIENCE

BCA, PGDCA, Msc (IT), BA/BSc (Computer Science)

ORDINANCES
AND OUTLINES OF TESTS,
SYLLABI AND COURSES OF READING

FOR

BACHELOR OF COMPUTER APPLICATIONS (B.C.A)
Programme Code : BCAB3PUP

(SEMESTER SYSTEM)

PART-I

(Semester 1st and 2nd)
FOR
For 2023-24 SESSION

PUNJABI UNIVERSITY PATIALA
(Established under Punjab Act no. 35 of 1961)

SYLLABUS

BACHELOR OF COMPUTER APPLICATIONS

OUTLINE OF PAPERS AND TESTS
FOR
B.C.A. First Year (1st Semester)
Programme Code : BCAB3PUP

For 2023-24 SESSION

Code	Title of Paper	Credit	Hours per Week	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCAB1101T	General English – I	4	4	70	30*	100	3
BCAB1102T	Punjabi (Compulsory) -I or Punjabi Compulsory - I (Mudla Gyan) **	4	4	70	30	100	3
BCAB1103T	Fundamentals of Information Technology	4	4	70	30	100	3
BCAB1104T	Programming Fundamentals using C	4	4	70	30	100	3
BCAB1105L	Software Lab –I (GUI Based Operating System and Office Automation)	2	4	70	30	100	3
BCAB1106L	Software Lab – II (Based on paper BCAB1104T Programming Fundamentals using C)	2	4	70	30	100	3
		20	**Total**	**420**	**180**	**600**	

Note:

1. The break up of marks for the internal assessment for theory/Practical except BCAB-1101T will be as under:
   - i. One or two tests out of which minimum one best will be considered for assessment. — 20 Marks
   - ii. Attendance — 5 Marks
   - iii. Class participation and behaviour — 5 Marks
2. The break up of marks for the internal assessment for BCAB1101T: General English – I will be as under:
   - i. Formal assessment through Interview/Self Introduction/Recitation etc. — 15 Marks
   - ii. Conversation Skills (particularly listening and speaking to be evaluated through oral examination) — 5 Marks
   - iii. Attendance — 5 Marks
   - iv. Class participation and behaviour — 5 Marks

*** Only those students who have not studied Punjabi up to matriculation can opt for Punjab Compulsory (Mudla Gyan). The code for the paper is same.***

OUTLINE OF PAPERS AND TESTS
FOR
B.C.A. First Year (2nd Semester)
Programme Code : BCAB3PUP

For 2023-24 SESSION

Code	Title of Paper	Credit	Hours per Week	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCAB1201T	General English – II	4	4	70	30*	100	3
BCAB1202T	Punjabi (Compulsory) - II or Punjabi Compulsory-II (Mudla Gyan) **	4	4	70	30	100	3
BCAB1203T	Digital Electronics	4	4	70	30	100	3
BCAB1204T	Data Structures	4	4	70	30	100	3
BCAB1205T	Basic Mathematics	4	4	70	30	100	3
BCAB1206L	Software Lab – III (based on BCAB1204T Data Structures)	2	4	70	30	100	3
BCAB1207T	Drug Abuse : Problem, Management and Prevention***		4	70	30	100	3
		22	**Total**	**420**	**180**	**600**	

Note:

1. The break up of marks for the internal assessment for theory/Practical except BCAB-1201T will be as under:
   - i. One or two tests out of which minimum one best will be considered for assessment. — 20 Marks
   - ii. Attendance — 5 Marks
   - iii. Class participation and behaviour — 5 Marks
2. The break up of marks for the internal assessment for BCAB1201T: General English – I will be as under:
   - i. Formal assessment through Interview/Self Introduction/Recitation etc. — 15 Marks
   - ii. Conversation Skills (particularly listening and speaking to be evaluated through oral examination) — 5 Marks
   - iii. Attendance — 5 Marks
   - iv. Class participation and behaviour — 5 Marks

***** Only those students who have not studied Punjabi up to matriculation can opt for Punjab Compulsory (Mudla Gyan). The code for the paper is same.***

*** BCAB1207T : Drug Abuse: Problem, Management and Prevention is a compulsory qualifying paper as per university guidelines, the marks for this paper are not counted for the total marks for the degree.

BCAB1103T : **FUNDAMENTALS OF INFORMATION TECHNOLOGY**

Max Marks: 70 **Maximum Time: 3 Hrs.**
Min Pass Marks: 35% **Lectures to be delivered: 45-55 Hrs**
Credit:4

Course Objectives

- Aware students about basic of computer and its evolution.
- Provide knowledge of different units of computer like processing unit, IO unit, and storage unit.
- Applications of IT.
- Advanced trends in IT.

Learning Outcome

On the successful completion of the course, students will be able to:

- Have a clear understanding of fundamentals of computers so as to apply it in real life
- problems.
- Develop an in depth knowledge of various motivational theories.
- Develop skills to get employment in I.T. field

Instructions for the paper setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers. Categories of Computers - Supercomputer, mainframe computer, network server, Workstation, Desktop computers, notebook computer, Tablet PC, handheld PC, smart phone.

Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR

Output Devices: Monitors, Impact Printers - Dot matrix, Character and Line printer, Non Impact Printers – DeskJet and Laser printers, Plotter.

Memories: Memory Hierarchy, Primary Memory – RAM, ROM, Cache memory. Secondary Storage Devices - Hard Disk, Compact Disk, DVD, Flash memory.

Software: Types of Software- System Software, Application Software, Firmware. Type of System Software: Operating Systems, Language Translators, Utility Programs, Communications Software. **Commonly Used Application Software**: Word Processor,

BCAB1104T : **PROGRAMMING FUNDAMENTALS USING C**

Max Marks: 70 **Maximum Time: 3 Hrs.**
Min Pass Marks: 35% **Lectures to be delivered: 45-55 Hrs.**
Credit:4

Course Objective
The course provides students with a detailed study of programming techniques using C programming language. Good programming habits, proper logical thinking, algorithm and flowchart development, writing efficient programs are taught in the course. Detailed lab exercises covering all aspects of the language are prepared.

Learning Outcome
- To analyze problems efficiently and develop comprehensive logic to solve it.
- To develop good algorithms and flowcharts to solve problems.
- To write C programs in a structured manner.

Instructions for the paper setter
The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

Instructions for the candidates
Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging.
Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.
Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion.
Control statements: branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures.
Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.
I/O functions: formatted & unformatted console I/O functions

SECTION B

Storage Classes: automatic, external, static and register variables.
Arrays: – One dimensional and two dimensional arrays
Declaration, initialization, reading values into an array, displaying array contents
Strings: input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strrev), table of strings.
Structures and unions: using structures and unions, comparison of structure with arrays and union.
Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers, pointers and arrays.
Introduction to Files in C: opening and closing files. Basic I/O operation on files.

BCAB1203T : **DIGITAL ELECTRONICS**

Max Marks: 70 **Maximum Time: 3 Hrs.**
Min Pass Marks: 35% **Lectures to be delivered: 45-55 Hrs.**
Credit:4

Course Objectives:

- To introduce the fundamentals of computers
- To introduce basic postulates of Boolean algebra and shows the correlation between
- Boolean expressions
- To introduce the methods for simplifying Boolean expressions
- To outline the formal procedures for the analysis and design of combinational circuits
- and sequential circuits
- To introduce the concept of computer memories

Learning Outcome:

After learning the course the students should be able to explain about the fundamentals of computers, digital number systems and logic circuits. The student should be able to solve logic function minimization. The students should be able to differentiate between combinational and sequential circuits such as decoders, encoders, multiplexers, de-multiplexers, flip-flops, counters, registers. The students should be able state the specifications of logic families. The student should be able to explain the different types of computer memories.

Instructions for the paper setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION-A

Fundamental Concepts: Introduction to Analog and Digital Systems, Digital Signals, Basic Digital Circuits: AND, OR, NOT, NAND, NOR, XOR and XNOR gates. Boolean algebra theorems, Characteristics of Digital IC.

Number Systems: Positional and Non-positional number systems, Binary, Decimal, Octal and Hexadecimal, Base conversions, Binary arithmetic: Addition and Subtraction, 1's complement, 2's complement, subtraction using 1's complement and 2's complement.

Combinational Logic Design: SOP and POS Representation of Logic functions, K-Map representation and simplification up to 4 variable expressions, Don't care condition.

SECTION - B

Multiplexers: 4X1, 8X1 and 16X1. De-multiplexers: 1 to 4, 1 to 8 and 1 to 16. BCD to Decimal decoder, Decimal to BCD encoder. Parity generator and Parity checker. Design of Half adder and Full adder

BCAB1204T : **DATA STRUCTURES**

Max Marks: 70 **Maximum Time: 3 Hrs.**
Min Pass Marks: 35% **Lectures to be delivered: 45-55 Hrs.**
Credit:4

Course Objective

- To give fundamental knowledge data type various data structure.
- To explain the basic concepts of searching and graph theories.
- To make the learners acquainted with the use of different theories.

Learning Outcome

- Understand the need for Data Structures when building Applications.
- Appreciate the need for optimized algorithm.
- Able to walk through insert and delete for different data techniques.
- Improve programming skills.

Instructions for the paper setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Basic concepts and notations: Types of data structures, Data structure operations, Mathematical notations and functions, Algorithmic complexity, Big 'O' notation, Time and space trade off.

Arrays: Linear array, representation of array in memory, traversing linear array, insertion and deletion in an array, Two-dimensional array, row major and column major orders, sparse matrix.

Stacks: Representation of stacks in memory (linked and sequential), operations on stacks, Applications of stacks: string reversal, parentheses matching.

Queues: Representation of queues in memory (linked and sequential), operations on queues, insertion in rear, deletion from front.

SECTION B

Linked list: Representation of linked list using static and dynamic data structures, insertion and deletion of a node from linked list, searching in link list, searching in sorted link list.

Trees: Definition and basic concepts, linked representation and representation in contiguous storage, binary tree, binary tree traversal, Binary search tree, searching, insertion and deletion in binary search tree.

Searching and sorting algorithms: Linear and binary search, bubble sort, insertion sort, selection sort, quick sort, merge sort.

Reference Books

1. Seymour Lipschutz, Theory and Practice of Data Structures, McGraw-Hill.
2. Vishal Goyal, Lalit Goyal, Pawan Kumar, A Simplified Approach to Data Structures, Shroff Publications.
3. Y. L. Tenenbaum, and A. J. Augenstein, Data Structures using C and C++, PHI.
4. Robert Sedgewick, Algorithms in C, Pearson Education.

BCAB1205T : **BASIC MATHEMATICS**

Max Marks: 70 **Maximum Time: 3 Hrs.**
Min Pass Marks: 35% **Lectures to be delivered: 45-55 Hrs.**
Credit:4

Course Objective

- To give fundamental knowledge of set theories,abstract algebra.
- To explain the basic concepts of matrices,trigonometry.
- To make the learners acquainted with the use of Calculus and vector analysis

Learning Outcome

On the successful completion of the course, students will be able to;

- Have a clear understanding of Mathematical functions.
- Develop an in depth knowledge of Mathematical theories.
- Develop skills to get employment in I.T and Analysis Field

Instructions for the paper setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C. Non Programmable Scientific Calculator is allowed.

SECTION A

Complex Numbers: Complex Numbers in the form of a+ib, Real and Imaginary parts of a complex number, Complex conjugate, algebra of complex numbers, square roots of a complex number, cube roots of unity.

Quadratic Equations: Solutions of Quadratic equations (with real and complex coefficients), Relations between roots and coefficients, Nature of roots, Equations reducible to quadratic equations.

Cartesian System of Rectangular Coordinates: Cartesian coordinate system, distance formula, section formula, centroid and incentre, area of triangle, condition for collinearities of three points in a plane.

Straight Line: Slope of a line, parallel and perpendicular lines, Equation of line in different forms, distance of a point from a line.

Circle: Standard form of equation of circle, General form, diameter form, three point form, Intersection of a line and a circle.

SECTION B

Matrices: Types of Matrices, Addition, Subtraction, Multiplication, Transpose, Conjugate and their properties, Symmetric, Skew-symmetric, Minor, co-factors, Adjoint, Inverse of matrices, Solution of linear system of equations using matrices.

Rank of a matrix, consistency of linear system of equations,

Determinants: Expansion of determinants (upto order 4), solution of linear system of equations using Cramer rule.

Reference Books:

1. NCERT Textbooks of Mathematics for +1 and +2.
2. M K. Jain, S.R.K. Iyengar and R.K. Jain," Numerical Methods for Scientific and Engineering Computation", Wiley.
3. B. S. Grewal, Higher Engineering Mathematics", Khanna Publishers.

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PUNJABI UNIVERSITY, PATIALA

OUTLINES OF TESTS, SYLLABI AND COURSES OF READINGS

FOR

PGDCA
(SEMESTER SYSTEM)

SEMESTERI & II

(Sessions 2022-23& 2023-2024)

PROGRAM CODE - PDCA1PUP

(As per RUSA Guidelines)

PUNJABI UNIVERSITY,
PATIALA 147002

PGDCA Semester I
Sessions 2022-23& 2023-2024

PROGRAM CODE - PDCA1PUP

Code No.	Title of Paper	Lectures per Week	Univ. Exam. Marks	Int. Ass. Marks
PDCA1101T	Introduction to Information Technology and E-Commerce	5	70	30
PDCA1102T	Computer Programming Using C	5	70	30
PDCA1103T	Windows Operating System and Office Automation	5	70	30
PDCA1104L	Programming Lab-I (Based on paper PGDCA-1102T	8	70	30
PDCA1105L	Programming Lab-II (Based on paper PGDCA-1103T	8	70	30

PGDCA Semester II
Sessions 2022-23& 2023-2024

Code No.	Title of Paper	Lectures per Week	Univ. Exam. Marks	Int. Ass. Marks
PDCA1201T	Database Management System	5	70	30
PDCA1202T	Programming using Python	5	70	30
PDCA1203T	Web Technology	5	70	30
PDCA1204L	Programming Lab-III (Based on paper PGDCA-1202T	8	70	30
PDCA1205L	Programming Lab-IV (Based on paper PGDCA-1203T	8	70	30

CONTINUOUS ASSESSMENT (THEORY PAPERS)

1.	Two tests will be conducted during the Semester. Both the tests will be considered for assessment.	:	60% of the marks allotted for Continuous Assessment
2.	Assignment/Quizzes	:	20% of the marks allotted for Continuous Assessment
3.	Attendance	:	10% of the marks allotted for Continuous Assessment.
4.	Class Participation and behavior	:	10% of the marks allotted for Continuous Assessment.

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POCA1101T : : Introduction to Information Technology and E-Commerce

Maximum Marks: 70
Minimum Pass Marks: 35%

Maximum Time: 3 Hrs.
Lectures to be delivered: 45-55

Course Objective: This course is meant to prepare students for work in industry in the information processing fields as well as prepare students for business and computer-related courses. On completion of this course, the students will be able to:

- Have basic knowledge of computer hardware and software;
- Understand business areas to which computers may be applied;
- Provide an introduction to business organisation and information systems;
- Develop the skills in communication, verbal and written, which play an important part in business computing and information processing;

Course Content

SECTION A

Computer Fundamentals: Block structure of a computer, characteristics of computers, problem solving with computers, generations of computers, Classification of computers on the basis of capacity, purpose, and generation.
Number System: Decimal, hexadecimal, and octal systems, conversion from one system to the other.
Binary Arithmetic: Addition, subtraction and multiplication.
Memory types: Magnetic core, RAM, ROM, Secondary, Cache, Input and Output Units: functional characteristics; Overview of storage devices: floppy disk, hard disk, compact disk, tape; Printers: Impact, non-impact. Graphical I/O devices: Light pen, joystick, Mouse, Touch screen; OCR, OMR, MICR

SECTION B

Computer languages: Machine language, assembly language, high level language, 4GL. Compiler, Interpreter, Assembler, System Software, Application Software.
Data Network and Communication: Network types, Transmission Modes, Network topologies,
Internet: Evolution of Internet, E-mail WWW, FTP, TELNET, IRC, Video Conferencing.
E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, Produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.
The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide

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PDCA1102T : **Computer Programming Using C**

Maximum Marks: 70 **Maximum Time: 3 Hrs.**

Minimum Pass Marks: 35% **Lectures to be delivered: 45-55**

Course Objective: This course is designed to explore computing and to show students the art of computer programming. Students will be able to learn Understand programming using C concepts for writing good programs. On completion of this course, the students will be able to

- Write, compile and debug programs in C language.
- Use different data types, operators and console I/O function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.
- Comprehend the concepts of structures and classes: declaration, initialization and implementation.
- Apply basics of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

Course Content

SECTION A

Problem Solving with Computers, c character set, identifier, constants, variables, rules for defining variables, Data types, operators: arithmetic, relational, logical, comma, conditional, assignment, arithmetic expressions, input and output statements, assignment statements.

Decision statement: if, if else, nested if, switch statement, break statement, continue statement, go to statement.
Loops and control statements: While loop, for loop and do-while loop, nested loops
Arrays: one dimensional Array, multi-dimensional arrays, array initialization.

SECTION B

Pointers: Pointer data type, pointers and arrays, pointers and functions.
Functions: definition, declaration, function prototype, types of functions, call by value, call by reference, recursion, processing character strings.

Structures: Using structures, arrays of structures and arrays in structures, union
Files in C: Sequential files, random access files, Unformatted files, Text files, binary files.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.
The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

PDCA1103T: **Windows Operating System and Office Automation**

Maximum Marks: 70 **Maximum Time: 3 Hrs.**

Minimum Pass Marks: 35% **Lectures to be delivered: 45-55**

Course Objective: This course is designed to explore basics of Windows operating system and its installation process. Students will be able to learn the concepts of MS Office and its utilities. On completion of this course, the students will be able to

- Install and maintain operating system and associated devices and drivers
- Create and edit word documents using advanced features
- Create and manipulate excel sheets
- Explore the use of power point presentations and the impact of multimedia

Course Content

SECTION A

Windows Operating System: features, history, hardware requirements and its installation SystemGraphics interface: Benefits, Screen attributes: icons and bars. Mouse vs. keyboard input, Features and accessories of the Windows program. Objects and their properties.
Folder and file management: Working with files, Naming files, Navigate to Folders with Windows Explorer, Copying and moving files, Deleting files, Managing folders, Creating,Viewing, Expanding and collapsing, Backing up and restoring files. Components of Windows: format of a window, moving windows, resizing windows, minimizing and maximizing windows.
Control panel: Customizing screens, Screen colors, Patterns, Spacing icons, selecting time/date, setting the Sound, Concept of menu Using Help, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories, System restore.Customizing printing, changing the print queue, configuring the printer, Adding printers. Working with fonts: changing, removing, adding, customizing mouse and keyboard use.
System properties and the device manager Management tools, Memory configuration, Safe mode Install and uninstall applications, Setup/troubleshooting issues.
Maintaining and optimizing disks: Disk Cleanup, Disk defragmenter, Compressing and uncompressing folders and files. Encrypting and decrypting folders and files.

SECTION B

Introduction to MS Word, MS Word Documents: Creating a File, Saving and File Formats, File views.Font/Character Formatting: Styles and Character/Font Formatting, Character Formatting.
Paragraph Formatting: Styles and Paragraph Formatting, Structural Formatting, Paragraph Decoration. Styles: Styles Group, Styles Task Pane.
Page Setup and Sections: Page Borders, Header and Footer Layer, Header and Footer Navigation and Design, Adding Header and Footer Material. Tables and picture insertion.

Introduction to MS Excel, Creating and Editing Worksheets and Workbooks
Exploring the types of Data, Date and Time, Modifying Cell Contents, Applying Number Formatting, Cell Range Operations, Controlling the Worksheet View, Copying and Moving Ranges, Using Names to Work with Ranges, Adding Comments to Cells.
Formula and Functions, sorting and filtering data, graphs and charts

Introduction to MS PowerPoint, creating and editing slides, Inserting Content from External Sources, Using Content Placeholders, Creating Text Boxes Manually, Working with Text Boxes, Understanding layouts and Themes, Applying a Theme, Working with Preset Placeholders, Customizing and Creating Layouts, Managing Slide Masters, Managing Themes, PrintingSlides.

Building Animation Effects, Transitions, and Support Materials: Understanding Animation and Transitions, Assigning Transitions to Slides, Using an Animation Preset.
MS Outlook: Organizing Messages, Contents, and Time with Outlook: Setting up E-mail Accounts, Modifying

Account Settings, Composing and Sending Messages, Reading and Replying to Messages, Understanding the Inbox Display, Outlook Data Files, Working the Outlook Folders, Setting Options for an Individual E-Mail Message.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.
The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- Office 2007 Bible- John Walkenbach, Herb Tyson, Faithe Wempen, Cary N. Prague, Michael R. Groh, Peter G. Aitken, Michael R. Irwin, Gavin Powell and LisaA.Buci.
- Working With MS-Office 2000, Tata McGraw-Hill Publishing, Content Development Group.Chennai.

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

Instructions to the External Paper Setter
The question paper will consist of three Sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 10.5 marks for each question. Section C will consist of 7-15 short answer type questions covering the entire syllabus uniformly and will carry a total of 28 marks.

Instructions for candidates

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.
- Use of non-programmable scientific calculator is allowed.

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Maximum Marks: 70 PDCA1201T : **Database Management System**
Minimum Pass Marks: 35% **Maximum Time: 3 Hrs.**
Lectures to be delivered: 40-45

Course Objective: This course is designed to explore computing and to show students the art of design and creation of relational databases. On completion of this course, the students will be able to

- Gain the knowledge and understanding of Database analysis and design.
- Gain the knowledge of the processes of Database Development and Administration.
- Understand the functional dependencies and design of the database
- Understand the concept of Normalization

Course Content

SECTION A

Introduction: Database Approach, Characteristics of a Database Approach, Database System Environment. Roles in Database Environment: Database Administrators, Database Designers, End Users, Application Developers. Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach, Classification of DBMSs. Architecture: Data Models, Database Schema and Instance, Three Schema Architecture, Data Independence – Physical and Logical data Independence. Database Conceptual Modelling by E-R model: Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.

SECTION B

Relational Data Model: Concepts and Terminology. Constraints: Integrity Constraints, Entity and Referential Integrity constraints, Keys: Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys. Relational Algebra: Basic Operations, Additional Operations, Example Queries. Relational Calculus: Tuple and Domain Relational Calculus, Example Queries.
Database Design: Problems of Bad Database Design. Normalization: Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms– 1NF, 2NF, 3NF, BCNF, Multi-valued Dependency, Join Dependency and Higher Normal Forms- 4NF, 5NF.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.
The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project- based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- Elmasry Navathe, "Fundamentals of Database System", Pearson Education.

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4 1 0 4

Maximum Marks: 70 PDCA1202T : **Programming with Python**
Minimum Pass Marks: 35% **Maximum Time: 3 Hrs.**
Lectures to be delivered: 40-45

Course Objective: This course is designed to explore computing and to show students the art of computer programming. Students will be able to learn and Understand programming using python concepts for writing good programs. On completion of this course, the students will be able to

- Understand the basics of Python programming language
- Use different data types and control structures
- Explore the use of Python functions
- Create programs to access files in Python

Course Content

SECTION A

Introduction to Python: History of Python, Strength and Weakness, Different Versions, Installing Python , Setting up in local environment, IDLE, Executing from file, command line from interactive mode, Python Identifiers and reserved key words.

Python syntax: Variables and Variables type, Data types, Data Types Conversion, Operators (Arithmetic, Comparison, Assignment, Bitwise, Logical, Membership, Identity), Operators Precedence, Python Decision making (if, el if, else, nested if), Python loops (while, for, nested loops), Break and continue statements.

Python Collections or Sequence: Sequence introduction, Number operations, String Operations, List, Tuple, Dictionary, Set.

Python Functions: Function introduction, User defined functions, Functions with parameters, Keywords and optional parameters, Scope of variables (Global and Local), Anonymous function – Lambda, In-build function, List comprehension.

SECTION B

Python Modules: Modules, Standard Modules (Sys, Math, Time), Import Statement, from statement, Dir() functions.

Python File handling: Sending Output to STDOUT Using the print() Method, Reading Input with the input() Method, Creating File Objects with the open() Method, Controlling File Access Modes, Working with File Object Attributes, Closing File Objects with the close() Method, Reading and Writing to File Objects with read() and write(), Using File Processing Functions from the OS Module.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.
The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project- based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

PDCA1203T: Web Technology

Maximum Marks: 70
Minimum Pass Marks: 35%

Maximum Time: 3 Hrs.
Lectures to be delivered: 45-55

Course Objective: This course is designed to explore the features of web technology and its significance in developing web-based applications. Students will be able to learn and Understand the concepts of web programming. On completion of this course, the students will be able to

- Understand the basics of HTML for creation of web pages
- Crete forms for interactive applications
- Integrate HTML and CSS
- Understand the design of applets

Course Content

SECTION A

Internet Basics: Networks, Protocols, TCP/IP, Internet Addresses, Ports, Sockets, Name Resolution, Firewalls, Protocol Tunneling, Proxy Servers, Internet Standards, governing the web HTTP, MIME, Inside URLs, Web applications, Overview of clients/servers web communication, comparison of web servers, Common Gateway Interface CGI.
Web Page Designing:Introduction to markup languages;.HTML: list, table, images, frames, forms, pages style sheets CSS;XML: DTD, XML Namespaces, XML schemes, Presenting XML with CSS and XSLT, XML-DOM, What is XHTML?

SECTION B

Client Side Scripting:Java script: Introduction, documents, forms, statements, functions, objects; Event and event handling; Browsers and the DOM, JQuery: Syntax, Selectors, Events and AJAX methods.
Server Side Programming: PHP: Introduction, requirements, PHP syntax, data type, variables, strings, operators, if-else, control structure, switch, array, function, file handling, form, sending email, file upload, session/state management, error and exception, PHP Database for dynamic Web pages.
Introduction to Servlets: Servlet Basic Servlet Structure, Servlet Lifecycle, Servlet APIs. Writing thread safe Servlets. Setting Cookies and Session Management with Servlet API.

Pedagogy:
The Instructor is expected to use leading pedagogical approaches in the class room situation, research-based methodology, innovative instructional methods, extensive use of technology in the class room, online modules of MOOCS, and comprehensive assessment practices to strengthen teaching efforts and improve student learning outcomes.

The Instructor of class will engage in a combination of academic reading, analyzing case studies, preparing the weekly assigned readings and exercises, encouraging in class discussions, and live project based learning.

Case/Class Discussion Assignments:
Students will work in groups of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-maker in the case.

Class Participation:
Attendance will be taken at each class. Class participation is scored for each student for each class

REVISED

SYLLABUS OF

B.A./B.Sc. Part-I (COMPUTER SCIENCE)
(Semester Ist & IInd)
(2023-24, 2024-25 and 2025-26 Sessions)
PROGRAM NAME: BCSB3PUP

PUNJABI UNIVERSITY PATIALA
(Established under Punjab Act no. 35 of 1961)

B.A./B.Sc. Part-I (COMPUTER SCIENCE)
(Semester I)

PAPER BCSB1101T: FUNDAMENTALS OF INFORMATION TECHNOLOGY

External Marks: 70 **Maximum Time: 3 Hrs.**
Minimum Pass Marks: 35% **Lectures to be delivered: 45-55**
Internal Assessment: 30

Course Objectives

- Aware students about basic of computer and its evolution.
- Provide knowledge of different units of computer like processing unit, IO unit, and storage unit.
- Applications of IT.
- Advanced trends in IT.

Learning Outcome

On the successful completion of the course, students will be able to;

- Have a clear understanding of fundamentals of computers so as to apply it in real life
- problems.
- Develop an in depth knowledge of various motivational theories.
- Develop skills to get employment in I.T. field

A) Instructions for paper-setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers. Categories of Computers - Supercomputer, mainframe computer, network server, Workstation, Desktop computers, notebook computer, Tablet PC, handheld PC, smart phone.

Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR

Output Devices: Monitors, Impact Printers - Dot matrix, Character and Line printer, Non Impact Printers – DeskJet and Laser printers, Plotter.

Memories: Memory Hierarchy, Primary Memory – RAM, ROM, Cache memory. Secondary Storage Devices - Hard Disk, Compact Disk, DVD, Flash memory.

Software: Types of Software- System Software, Application Software, Firmware. Type of System Software: Operating Systems, Language Translators, Utility Programs, Communications Software. **Commonly Used Application Software**: Word Processor, Spreadsheet, Database, Education, Entertainment Software.

Computer Languages: Machine language, assembly language, high level language, 4GL.

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B.A./B.Sc. Part-I (COMPUTER SCIENCE)
(Semester II)
(2020-21, 2021-22 and 2022-23 Sessions)

PAPER BCSB1201T : OFFICE AUTOMATION TOOLS

External Marks: 70
Minimum Pass Marks: 35%
Internal Assessment: 30

Maximum Time: 3 Hrs.
Lectures to be delivered: 45-55

Course Objectives

- Learn MS word
- Learn MS Power point
- Know MS Excel
- To give fundamental knowledge Office tools .
- To explain the basic concepts of word,powerpoint,excel.
- To make the learners acquainted with the use of presentation sheets and documents.

Learning Outcome

On the successful completion of the course, students will be able to;

- Have a clear understanding of documents,sheets and presentation.
- Develop an in depth knowledge of various office theories.
- Develop skills to get employment in I.T Field

A) Instructions for paper-setter

The question paper will consist of three sections, Sections A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus. Each question will carry 12 marks, which may be segregated into sub-parts. Section C will be compulsory with 11 short answer type questions of 02 marks each, which will cover the entire syllabus.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

OFFICE: Basic layout, components, Office Characteristics, Common Office Controls and shortcuts for Home, Insert, Page Layout, Mailing, Review and View

Word: Introduction to Word Processing, Toolbars, Ruler, Menus, Keyboard Shortcut. Previewing documents, Printing documents, Formatting documents, Checking the grammar and spelling, Formatting via find and replace, Using the Thesaurus, using Auto Correct, word count, Hyphenating, Mail merge, mailing Labels Wizards and Templates, Handling Graphics, tables as Converting a word document into various formats.

PowerPoint: Introduction, Elements of Power Point Package, Starting and exploring Power Point menus (Insert, Format, Tools, Slide Show, Window, Help options and all of their features, Options and sub options etc.), Creating, inserting, deleting and formatting slides, Formatting and enhancing text, Slides with graphs, Giving Animation to slides, Transfer of files between Power Point and other word processors and software packages.

Department of Mathematics

PUNJABI UNIVERSITY, PATIALA

OUTLINES OF TESTS,

SYLLABI AND COURSES OF READING

FOR

B. A./ B.Sc

Programme Code:MTHB3PUP

Batch 2023 onwards

B.A./B.Sc. First Year (Semester-I and II)
MATHEMATICS
BATCH 2023 ONWARDS
FOR SESSIONS(2023-24, 2024-25 &2025-26)

Outlines of Tests, Syllabus and Courses of Reading

CBCS

SEMESTER-I

Code	Title of Paper/Subject	Hrs/Week	Credit	Max Cont. Assmt.	Marks Univ Exam	Total
MTHB1101T	Calculus	4.5	3	15	35	50
MTHB1102T	Algebra and Trignometry	4.5	3	15	35	50

SEMESTER-II

Code	Title of Paper/Subject	Hrs/Week	Credit	Max Cont. Assmt.	Marks Univ Exam	Total
MTHB1201T	Co-ordinate Geometry	4.5	3	15	35	50
MTHB1202T	Differential Equations	4.5	3	15	35	50

In addition to the above papers the students in Semester II are also required to qualify the paper of Drug Abuse: Problem, Management and Prevention. The syllabus of this paper can be obtained from the web site www.punjabiuniversity.ac.in

MTHB1101T: CALCULUS

Course Outcomes:	
CO1	To understand the order completeness properties of real numbers
CO2	Able to learn basic properties of limits, infinite limits, indeterminate forms.
CO3	To understand Continuous functions, types of discontinuities, continuity of composite functions.
CO4	To know Rolle's Theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, their geometric interpretation and applications.
CO5	To understand Hyperbolic, inverse hyperbolic functions of a real variable and their derivatives.

For Regular Students / Students of Centre for Distance and Online Education
Maximum Marks: 50 Marks

Maximum Time: 3 Hrs.

For Regular students:6Lectures of 45minutes/week

External Marks: 35
Internal Assessment: 15
Pass Percentage: 35%
For Private Students
Maximum Marks: 50 Marks

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 06 marks and Section C will be of 11 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Sections A and B and compulsory question of Section C.

SECTION-A

Properties of real numbers :
Order property of real numbers, bounds, l.u.b. and g.l.b. order completeness property of real numbers, archimedian property of real numbers.
Limits: ε -δ definition of the limit of a function, basic properties of limits, infinite limits, indeterminate forms.
Continuity: Continuous functions, types of discontinuities, continuity of composite functions, continuity of f (x) , sign of a function in a neighborhood of a point of continuity, intermediate value theorem, maximum and minimum value theorem.

MTHB1102T: ALGEBRA AND TRIGONOMETRY

Course Outcomes:	
CO1	To understand D'Moivre's theorem, application of D'Moivre's theorem.
CO2	To know about exponential, logarithmic, direct and inverse circular and hyperbolic functions of a complex variable.
CO3	To understand Summation of series including Gregory Series.
CO4	To know Hermitian and skew-hermitian matrices,linear dependence of row and column vectors.
CO5	To understand Eigen-values, eigen-vectors and characteristic equation of a matrix.

For Regular Students / Students of Centre for Distance and Online Education
Maximum Marks: 50 Marks

Maximum Time: 3 Hrs.
For Regular students:6Lectures of 45minutes/week

External Marks: 35
Internal Assessment: 15
Pass Percentage: 35%
For Private Students
Maximum Marks: 50 Marks

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 06 marks and Section C will be of 11 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and compulsory question of Section C.

SECTION-A

D'Moivre's theorem, application of D'Moivre's theorem including primitive nth root of unity. Expansions of $\sin n\theta$, $\cos n\theta$, $\sin^n\theta$, $\cos^n\theta$ $(n \in N)$. The exponential, logarithmic, direct and inverse circular and hyperbolic functions of a complex variable. Summation of series including Gregory Series.

SECTION-B

Hermitian and skew-hermitian matrices, linear dependence of row and column vectors, row rank, column rank and rank of a matrix and their equivalence. Theorems on consistency of a system of linear equations (both homogeneous and non-homogeneous). Eigen-values, eigen-vectors and characteristic equation of a matrix. Cayley-Hamilton theorem and its use in finding inverse of a matrix. Diagonalization.

MTHB1201T: CO-ORDINATE GEOMETRY

Course Outcomes:	
CO1	To understand transformation of axes in two dimensions
CO2	Able to learn joint equation of pair of straight lines and angle between them. Condition of parallelism and perpendicularity.
CO3	To understand the circle through intersection of two lines, tangents, normals, chord of contact.
CO4	To know General equation of a conic.
CO5	To understand the special properties of parabola, ellipse and hyperbola.

For Regular Students / Students of Centre for Distance and Online Education
Maximum Marks: 50 Marks

External Marks: 35

Internal Assessment: 15

Pass Percentage: 35%

For Private Students
Maximum Marks: 50 Marks

Maximum Time: 3 Hrs.

For Regular students:6Lectures of 45minutes/week

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 06 marks and Section C will be of 11 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and compulsory question of Section C.

SECTION-A

Transformation of axes in two dimensions: Shifting of origin, rotation of axes, invariants.

Pair of Straight Lines : Joint equation of pair of straight lines and angle between them. Condition of parallelism and perpendicularity. Joint equation of the angle bisectors. Joint equation of lines joining origin to the intersection of a line and a curve.

Circle : General equation of circle. Circle through intersection of two lines, tangents, normals, chord of contact, pole and polar, pair of tangents from a point, equation of chord in terms of mid-point, angle of intersection and orthogonality, power of a point

MTHB1202T: DIFFERENTIAL EQUATIONS

Course Outcomes:	
CO1	To understand Linear differential equations and equations reducible to linear differential equations.
CO2	Able to learn the solution techniques of Linear homogeneous and non-homogeneous differential equations of higher order with constant coefficients.
CO3	Will learn to solve differential equations with variable coefficients.
CO4	Learn to apply Power Series method, Frobenius method
CO5	To understand the recurrence relations, orthogonality, Rodrigue's formula.

For Regular Students / Students of Centre for Distance and Online Education
Maximum Marks: 50 Marks

Maximum Time: 3 Hrs.
For Regular students:6Lectures of 45minutes/week

External Marks: 35

Internal Assessment: 15

Pass Percentage: 35%

For Private Students
Maximum Marks: 50 Marks

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 06 marks and Section C will be of 11 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and compulsory question of Section C.

SECTION-A

First order differential equations : Order and degree of a differential equation. Homogeneous differential equations, equations reducible to Homogenous differential equations . Exact differential equations. Linear differential equations and equations reducible to linear differential equations.

Higher order differential equations : Wronskian. Solution of Linear homogeneous and non-homogeneous differential equations of higher order with constant