

2018
-19

Multani Mal Modi College

Unit Planning B.C.A

Computer Science Department



MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA I (Semester I)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2018-19**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
August 2018				
1.	Comprehension	<i>W. Standard Allen: Living English Structure (Orient Longman)</i>	Lecture, Discussion Method,	
2.	Change the Number			
3.	Change the Gender			
4.	Words commonly mis-spelt	Wilford D. Best: The Student's Companion (Rupa)	Deductive Method, Interactive Method, Worksheets	
September 2018				
5.	Antonyms Synonyms	Wilford D. Best: The Student's Companion (Rupa)	Lecture, Discussion Method,	
6.	Fill up using correct determinant			

7.	Filling up the correct form types of the tense in the sentence: present/ past /future tense with simple/continuous/perfect/perfect continuous forms			
8.	a) Reordering word groups in the sentence to make a meaning full sentence. b) <i>Translating</i> a paragraph from Punjabi/Hindi to English.			
October 2018				
9.	Identify various types of clauses and phrases in the sentence: finite and non-finite subordinate clauses: noun clauses and phrases, adjective clauses and phrases, adverb clauses and phrases	Wilford D. Best: The Student's Companion (Rupa)		
10.	Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations			
11.	Write meaning of given word and using in the sentence			
November 2018				
12.	a) Composition on a given topic/title based on any current social, environment, health issues. b) Formal Letter Writing (invitation, accepting/rejecting an invitation, apology, welcome,	Wilford D. Best: The Student's Companion (Rupa)		

BCA-I SEMESTER-Ist

Paper: BCA-113

Subject: Fundamentals of Information Technology

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **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.
- **Assignment-1**
- **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.

TILLMST-II

- **Number System:** Non-positional and positional number systems, Base conversion, Concept of Bit and Byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other. Binary Arithmetic: Addition, subtraction and multiplication, 1's complement, 2's complement, subtraction using 1's complement and 2's complement.
- **Computer Codes:** weighted and non-weighted code, BCD, EBCDIC, ASCII, Unicode.
- **Computer Network:** Network types, network topologies.
- **Assignment-1**
- **Internet Related Concepts:** Internet, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Web Search Engine, Net Surfing, web portal, Wiki, Blog.
- **Advanced Trends in IT :** Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, Cloud Technology, Virtual LAN Technology, Firewall, E-Commerce, M-Commerce, Nanotechnology, Virtual Reality, BPO and KPO, Online shopping, Social Media - YouTube, FaceBook, Linkedin, Twitter, Google+.

TILLFINAL EXAM

- **Applications of IT:** IT in Business and Industry, IT in Education & training, IT in Science and Technology, IT and Entertainment, Current Trends in IT Application - AI, Virtual Reports, voice recognition, Robots, Multimedia Technology.

Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%



Paper: BCA-114
Programming Fundamentals using C

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I
<ul style="list-style-type: none"> • 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. <p>Assignment-1</p> <ul style="list-style-type: none"> • 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 • Storage Classes: automatic, external, static and register variables.
TILLMST-II
<ul style="list-style-type: none"> • 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. <p>Assignment-2</p> <ul style="list-style-type: none"> • 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.
TILLFINAL EXAM
<ul style="list-style-type: none"> • Introduction to Files in C: opening and closing files. Basic I/O operation on files.

Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%

3	Attendance	20%
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MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA I (Semester II)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2018-19**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
February 2019				
1.	Comprehension	<i>W. Standard Allen: Living English Structure (Orient Longman)</i>	Lecture, Discussion Method,	
2.	Fill up using correct form of verb			
3.	Usage of the adverb, adjective etc.			
4.	Write Antonym of the given word and use both the given word and its antonym in the single sentence clarifying meaning and usage	Wilford D. Best: The Student's Companion (Rupa)	Deductive Method, Interactive Method, Worksheets	
March 2019				
5.	Give different meanings to Synonyms and use them in sentences	Wilford D. Best: The Student's Companion (Rupa)	Lecture, Discussion Method,	
6.	Give meaning and make sentences for idioms			

7.	Conversion among various types of the tenses in the sentence: present/ past /future tense with simple/continuous/perfect forms			
8.	a) Conversion between Direct/Indirect speech b) Conversion between active/passive voice			
April 2019				
9.	Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations	Wilford D. Best: The Student's Companion (Rupa)		
10.	Composition on a given topic/title based on any current social, environment, health issues.			
11.	Formal Letter Writing (Applying for a job, making a complaint, asking for information)			
12.	Translating a paragraph from Punjabi/Hindi to English (50-75 words)	Wilford D. Best: The Student's Companion (Rupa)		

BCA-123

Digital Electronics

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I
<ul style="list-style-type: none"> • 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. <p>Assignment-1</p> <ul style="list-style-type: none"> • Combinational Logic Design: SOP and POS Representation of Logic functions, K-Map representation and simplification up to 4 variable expressions, Don't care condition. • 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
TILLMST-II
<ul style="list-style-type: none"> • Flip-Flops: Introduction, Latch, Clocked S-R Flip Flop, Preset and Clear signals, D-Flip Flop, J-K Flip Flop, The race-around condition, Master Slave J-K Flip Flop, D-Flip-Flop, Excitation Tables of Flip Flops. Edge-Triggered Flip Flops. <p>Assignment-2</p> <ul style="list-style-type: none"> • A/D and D/A Converters: Introduction, Digital to Analog Converters: Weighted-Register D/A converter, R-2R Ladder D/A converter.
TILLFINAL EXAM
<ul style="list-style-type: none"> • Analog to Digital Converters: Quantization and encoding, Parallel-comparator A/D converter, Counting A/D converter.

Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-124

Data Structures

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **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.
- Assignment-1**
- **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.
 - **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.

TILLMST-II

- **Trees:** Definition and basic concepts, linked representation and representation in contiguous storage,
- Assignment-2**
- binary tree, binary tree traversal, Binary search tree, searching, insertion and deletion in binary search tree.

TILLFINAL EXAM

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

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-125

Basic Mathematics

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I		
<ul style="list-style-type: none"> • 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. <p>Assignment-1</p> <ul style="list-style-type: none"> • Straight Line: Slope of a line, parallel and perpendicular lines, Equation of line in different forms, distance of a point from a line. • Circle: Slandered form of equation of circle, General form, diameter form, three point form, Intersection of a line and a circle. • Matrices: Types of Matrices, Addition, Subtraction, Multiplication, Transpose, Conjugate and their properties, Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian, Orthogonal and Unitary matrices, Minor, co-factors, Adjoint, Inverse of matrices, Solution of linear system of equations using matrices. 		
TILLMST-II		
<ul style="list-style-type: none"> • Rank of a matrix, consistency of linear system of equations, Characteristic equation, eigen values & eigen vectors, Diagonalization of matrices, Cayley Hamilton theorem. • Determinants: Expansion of determinants (upto order 4), solution of linear system of equations using Cramer rule, Properties of Determinants. <p>Assignment-2</p> <ul style="list-style-type: none"> • Probability: Elementary events, Sample space, Compound events, Type of events, Mutually Exclusive, Independent events, Addition Law of probability (for 2 and 3 events), Conditional probability, Multiplication Theorem of probability, Baye's theorem. • Transportation problem: Mathematical formulation of transportation problem, Initial Basic feasible solution (NWCM, LCEM, VAM methods), Optimal solution using MODI method, Degeneracy in transportation problems. 		
TILLFINAL EXAM		
<ul style="list-style-type: none"> • Assignment Problem: Mathematical formulation of Assignment problem, Solution by Hungarian method, Unbalanced Assignment problem, Maximisation Assignment problem 		
Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)

UNIT PLANNING(SESSION 2018-19)

2	Written Assignments	40%
3	Attendance	20%



MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA II (Semester III)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2018-19**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
August 2018				
1.	Prose Parable – (1-10 chapters)	<i>Prose Parable – (1-10 chapters)</i>	Lecture, Discussion Method,	
2.	Comprehension	<i>W. Standard Allen: Living English Structure (Orient Longman)</i>		
3.	Transcoding : Prose to dialogue	<i>The Written Wond by Vandana R. Singh</i>		
September 2018				
5.	(b) Error correction in sentences. (c) Drafting questions based on given inputs	<i>The Written Wond by Vandana R. Singh</i>	Lecture, Discussion Method,	
6.	Making inquiries			
October 2018				8.
9.	Suggesting changes	<i>The Written Wond by Vandana R. Singh</i>		
10.	. Registering complaints			
11.	Write meaning of given word and using in the sentence			

November 2018

12.	Asking and giving information a) Development of Story from give hints b) Application for Job including CV/Resume	The Written Wond by Vandana R. Singh		
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BCA-212

Discrete Mathematics

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Set Theory:** Sets, Type of sets, Set operations, Principle of Inclusion-Exclusion, Cartesian product of sets, Partitions.
 - **Logic :** Propositions, Implications, Precedence of logical operators, Translating English sentences into logical expressions, Propositional equivalence
 - **Principle of Mathematical induction.**
 - **Relations:** Relations and diagraph, n-ary relations and their applications, properties of relations, representing relations, closure of relation, equivalence relation, operation on relations, partial ordering.
- Assignment 1**
- **Functions:** Functions, One-to-one Functions, Onto Functions, Inverse and Composition of Functions, Floor Function, Ceiling Function.

TILLMST-II

- **Basic Concepts (Only Definition):** Big-O Notation, Big-Omega and Big-Theta Notation.
- Assignment 2**
- **Graphs:** Introduction to Graph, Graph terminology, Representing graphs and Graph Isomorphism, Connectivity, Euler Paths and Circuits, Hamiltonian paths and circuits, Shortest Path Problems, Planar Graphs.

TILLFINAL EXAM

- **Trees :** Trees, labelled trees, Tree Traversal, Undirected trees, Spanning Trees,

Minimum spanning trees.		
Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-213: Computer System Organization and Architecture

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I	
<ul style="list-style-type: none"> • Computer System Organisation: CPU Organisation, Instruction Execution (instruction cycle, types of instructions), RISC v/s CISC, Design Principles for Modern Computers, Instruction level parallelism. Processor level parallelism. • Primary memory: Memory addresses, Byte Ordering, Error-correcting codes, Cache memory. <p>Assignment-1</p> <ul style="list-style-type: none"> • Secondary memory: Memory hierarchy, SCSI disk, RAID. • Instruction Set Architecture: Instruction formats, Expanding opcodes, types of addressing modes, data transfer and manipulation instructions, Program control(status-bit conditions, conditional branch instructions, program interrupt, types of interrupt). 	
TILLMST-II	
<ul style="list-style-type: none"> • Register Transfer Language: Register Transfer, Bus and memory transfer, Arithmetic micro-operations, Logic micro-operations, Shift micro-operations, Arithmetic logic shift unit <p>Assignment-2</p> <ul style="list-style-type: none"> • Micro-programmed control, control word, control memory (concepts only) • Input-output Organisation- I/O interfaces (I/O bus and interface modules, I/O versus memory bus, isolated versus memory-mapped I/O). 	
TILLFINAL EXAM	
<ul style="list-style-type: none"> • Asynchronous Data transfer (strobe control, handshaking), modes of transfer (programmed I/O, interrupt-initiated I/O, software considerations), Direct memory access 	
Mode of Assessment	

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-214: Object Oriented Programming using C++

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Evolution of OOP** : Procedure Oriented Programming, OOP Paradigm, Advantages and disadvantages of OOP over its predecessor paradigms.
 - **Characteristics of Object Oriented Programming** : Abstraction, Encapsulation, Data hiding, Inheritance, Polymorphism, code Extensibility and Reusability, User defined Data Types.
 - **Introduction to C++** : Identifier and keywords, Constants, Operators
 - **Pointers**: Pointer Operations, Pointer Arithmetic, Pointers and Arrays, Multiple indirections, Pointer to functions.
 - **Function** : Prototyping, Definition and Call, Scope Rules, Parameter Passing Value, by address and by reference, Functions returning references, Const Functions, recursion, function overloading, Default Arguments, Const Arguments.
- Assignment-1**
- **Classes, Objects and Members** : Class Declaration and Class Definition, Defining member functions, Defining Object, making functions inline, Members access control, Nested Classes, This Pointer.
 - **Object as function arguments, array of objects**, functions returning objects, const members and member functions. Static data members and static member functions, Friend functions and Friend classes.

TILLMST-II

- **Constructors** : Properties, types of constructors (Default, parameterized and copy), Dynamic constructors, Multiple constructors in classes.
 - **Destructors** : Properties, Virtual destructors, Destroying objects, Rules for constructors and destructors, Array of objects.
- Assignment-2**
- Dynamic memory allocation using new and delete operators.
 - **Inheritance** : Defining derived classes, inheriting private members, single inheritance, types of derivation, function, function redefining, constructors in derived class.
 - **Types of inheritance**: Single, Multiple, Multi level and Hybrid,

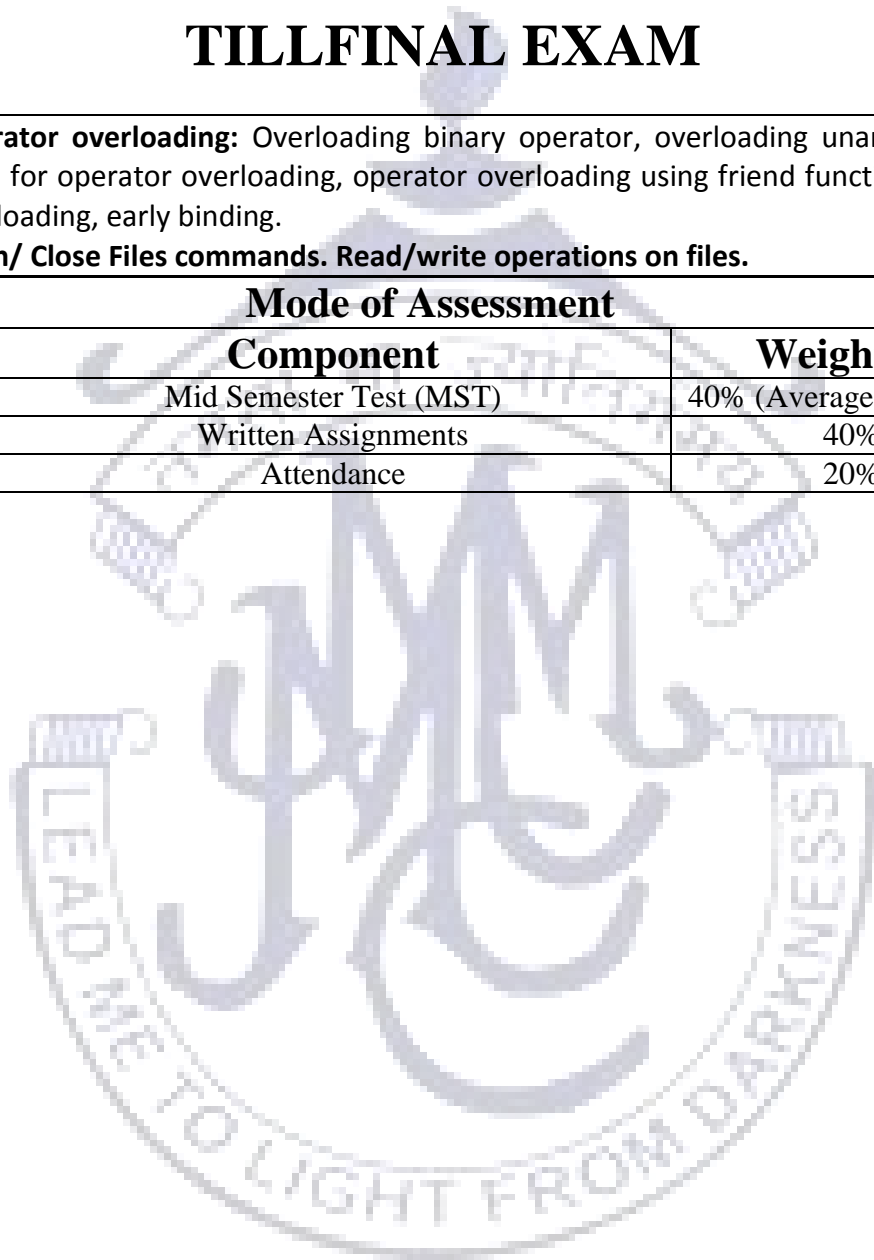
- **Types of base classes:** Direct, Indirect, Virtual, Abstract, Code Reusability.
- **Polymorphism :** Methods of achieving polymorphic behavior. Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class. Difference between function overloading, redefining and overriding.

TILL FINAL EXAM

- **Operator overloading:** Overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function. Function overloading, early binding.
- **Open/ Close Files commands. Read/write operations on files.**

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%



BCA-215: Fundamentals of Database Management System

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **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, Categories of Data Models- Conceptual Data Models, Physical data Models, Representational Data Models, such as, Object Based Models, Record Based Models, Database Schema and Instance, Three Schema Architecture, Data Independence – Physical and Logical data Independence.
- Assignment-1**
- **Database Conceptual Modelling by E-R model:** Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.
 - **Enhanced E-R Modelling:** Aggregation, Generalization, Converting ER Diagrams to Tables.
 - **Relational Data Model:** Concepts and Terminology, Characteristics of Relations.
 - **Constraints: Integrity Constraints-** Entity and Referential Integrity constraints, Keys- Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys.

TILLMST-II

- **Relational Algebra:** Basic Operations, Additional Operations, Example Queries.
 - **Database Design:** Informal Design Guidelines for Relation Schemas, Problems of Bad Database Design,
- Assignment-2**
- **Normalization:** Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms– 1NF, 2NF, 3NF, Boyce-Codd NF,

TILLFINAL EXAM

- **MS-ACCESS:** introduction to MS-ACCESS, working with databases and tables, queries in Access, Applying integrity constraints, Introduction to forms, sorting and filtering, controls, Reports and Macro: creating reports, using Macros.

MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA II (Semester IV)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2015-16**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
January 2019				
1.	1. Old man and the Sea by Ernest Hemmingway	<i>Old man and the Sea by Ernest Hemmingway</i>	Lecture, Discussion Method,	
2.	Small words for big ones from the book Students Companion	<i>Living English Structure : W. Stannard Allen (Orient Longman)</i>		
4.	Short formal notice writing such as public, legal and memorandum			
February 2019				
5.	Two short formal classified advertisements and display advertisement	<i>Living English Structure : W. Stannard Allen (Orient Longman)</i>	Lecture, Discussion Method,	
6.	Report writing	<i>The Students' Companion by Wilfred D. Best</i>		
March 2019				
7.	Transforming one type of sentences	<i>The Students' Companion by Wilfred D. Best</i>		
April 2019				
8.	c) Transforming of	<i>The Students'</i>		

	Degree	Companion by Wilfred D. Best		
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BCA-222: Computer Networks

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Introduction to Computer networks**, Applications, Network hardware and Software (protocol hierarchies, design issues for layers,
- **interfaces and services**: connection oriented and connection less), Network structure and architecture- point to point, multicast, broadcast,
- **Classification of networks**-LAN, MAN and WAN. Reference models, the OSI reference model, TCP / IP reference model.Comparison between OSI and TCP / IP models.

Assignment-1

- **Data Link Layer**: Design issues, Services to network layer, Framing, Error control, Flow control
- **Elementary data link protocols**- unrestricted simplex protocol, simplex stop and wait protocol, simplex protocol for a noisy channel.

TILLMST-II

- **Network layer**: Design issues, Services to the transport layer, Routing algorithms- Static/ non-adaptive and dynamic/adaptive algorithms. Congestion control algorithms – the leaky bucket algorithm, the token bucket algorithm.

Assignment-2

- **Transport layer**, design issues, connection management-addressing, establishing and releasing connection, transport layer protocols- TCP, UDP.
- **Application layer**: The DNS Name Space, Electronic Mail, The World Wide Web,

TILLFINAL EXAM

- **Network security**: Introduction to cryptography, substitution ciphers, transposition ciphers, one-time pads, two fundamental cryptographic principles, public-key algorithms (RSA, other Public-key algorithms), digital signatures (symmetric-key signatures, public key-signatures, message digests)

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-223: Management Information System

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Management Information system:** Meaning and definition, Role of information system, Nature and scope of MIS.
 - **Information and system concepts:** Definition and types of information, Information quality, dimensions of information, value of information, general model of human as an information processor. System related concepts, elements of a system, and types of system.
- Assignment-1**
- **Role and importance of Management:** Introduction, levels and functions of management.
 - **Structure and classification of MIS,** Components of MIS, Framework for understanding MIS: Robert Anthony’s hierarchy of management activity, Information requirements and levels of management.

TILLMST-II

- **Decision making concept,** types of decisions, methods of choosing among alternatives, Role of MIS in decision making.
 - **Simon’s model of decision making,** Structured and unstructured decisions.
- Assignment-2**
- **Development of MIS:** Stages in the development of MIS, System development approaches: Waterfall model, Prototyping, Iterative enhancement model, Spiral model.
 - **Applications of information systems in Functional areas:** Marketing MIS, Financial MIS, Production MIS, Personnel MIS.

TILLFINAL EXAM

- **Decision Support Systems:** Definition and characteristics, MIS versus DSS, Tools and Models for decision support.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-224: Computer Oriented Numerical and Statistical Methods

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Basics:** Floating point representation of numbers, arithmetic operation with normalised floating point numbers and its consequences, errors in numbers, binary representation of numbers.
- **Solution of transcendental equations:** Bi-section method, Regula-falsi method, Newton/Raphson method, Secant method
Assignment-1
- **Solution of simultaneous algebraic equations:** Gauss elimination method, pivoting, ill-conditioned equations, Gauss-Seidel iterative method, comparison of direct and iterative method.
- **Interpolation:** Lagrange's interpolation, Newton Interpolation
- **Curve Fitting:** Linear regression, Polynomial regression, Exponential Regression

TILLMST-II

- **Introduction to Statistics:** Meaning, scope, collection, classification of data. Application based on and processing logic of measures of central tendency, dispersion
Assignment-2
- **Bivariate Data:** Correlation, Meaning, and Type of correlation, correlation and causation, methods of studying correlation, algorithm to compute Karl Pearson's Correlation and rank correlation. Applications based on correlation.

TILLFINAL EXAM

- **Linear Regression:** Processing logic of and numerical based on fitting of regression lines (Using least square method).(Properties without Proofs)

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-225: Relational Database Management System with Oracle

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Relational Model:** storage organisations for relations, relational algebra - set operators, relational operators, relational calculus - domain calculus, tuple calculus.
- **Decomposition of Relation Schemes:** functional dependencies, multivalued dependencies, normal forms for relational schemes.
- **Relational Query Language:** DDL, DML, DCL.
Assignment-1
- **Database Integrity:** domain integrity, entity integrity, referential integrity.
- **Introduction to Oracle:** Oracle as client/server architecture, getting started, creating, modifying, dropping databases. Inserting, updating, deleting data from databases, SELECT statement, Data constraints (Null values, Default values, primary, unique and foreign key concepts)

TILLMST-II

- Computing expressions, renaming columns, logical operators, range searching, pattern matching, Oracle functions, grouping data from tables in SQL, manipulating dates.
Assignment-2
- **Working with SQL:** triggers, use of data base triggers, database triggers Vs. SQL*forms.

TILLFINAL EXAM

- **Types of triggers,** how to apply database triggers, BEFORE vs. AFTER triggers, combinations, syntax for creating and dropping triggers.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-213: Computer System Organization and Architecture

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Computer System Organisation:** CPU Organisation, Instruction Execution (instruction cycle, types of instructions), RISC v/s CISC, Design Principles for Modern Computers, Instruction level parallelism. Processor level parallelism.
- **Primary memory:** Memory addresses, Byte Ordering, Error-correcting codes, Cache memory.
Assignment-1
- **Secondary memory:** Memory hierarchy, SCSI disk, RAID.
- **Instruction Set Architecture:** Instruction formats, Expanding opcodes, types of addressing modes, data transfer and manipulation instructions, Program control(status-bit conditions, conditional branch instructions, program interrupt, types of interrupt).

TILLMST-II

- **Register Transfer Language:** Register Transfer, Bus and memory transfer, Arithmetic micro-operations, Logic micro-operations, Shift micro-operations, Arithmetic logic shift unit
Assignment-2
- **Micro-programmed control,** control word, control memory (concepts only)
- **Input-output Organisation-** I/O interfaces (I/O bus and interface modules, I/O versus memory bus, isolated versus memory-mapped I/O).

TILLFINAL EXAM

- **Asynchronous Data transfer** (strobe control, handshaking), modes of transfer (programmed I/O, interrupt-initiated I/O, software considerations), Direct memory access

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-214: Object Oriented Programming using C++

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Evolution of OOP** : Procedure Oriented Programming, OOP Paradigm, Advantages and disadvantages of OOP over its predecessor paradigms.
- **Characteristics of Object Oriented Programming** : Abstraction, Encapsulation, Data hiding, Inheritance, Polymorphism, code Extensibility and Reusability, User defined Data Types.
- **Introduction to C++** : Identifier and keywords, Constants, Operators
- **Pointers**: Pointer Operations, Pointer Arithmetic, Pointers and Arrays, Multiple indirections, Pointer to functions.
- **Function** : Prototyping, Definition and Call, Scope Rules, Parameter Passing Value, by address and by reference, Functions returning references, Const Functions, recursion, function overloading, Default Arguments, Const Arguments.

Assignment-1

- **Classes, Objects and Members** : Class Declaration and Class Definition, Defining member functions, Defining Object, making functions inline, Members access control, Nested Classes, This Pointer.
- **Object as function arguments, array of objects**, functions returning objects, const members and member functions. Static data members and static member functions, Friend functions and Friend classes.

TILLMST-II

- **Constructors** : Properties, types of constructors (Default, parameterized and copy), Dynamic constructors, Multiple constructors in classes.
- **Destructors** : Properties, Virtual destructors, Destroying objects, Rules for constructors and destructors, Array of objects.

Assignment-2

- Dynamic memory allocation using new and delete operators.
- **Inheritance** : Defining derived classes, inheriting private members, single inheritance, types of derivation, function, function redefining, constructors in derived class.
- **Types of inheritance**: Single, Multiple, Multi level and Hybrid,
- **Types of base classes**: Direct, Indirect, Virtual, Abstract, Code Reusability.
- **Polymorphism** : Methods of achieving polymorphic behavior. Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class. Difference between function overloading, redefining and overriding.

TILLFINAL EXAM

- **Operator overloading:** Overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function. Function overloading, early binding.
- **Open/ Close Files commands. Read/write operations on files.**

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%



BCA-215: Fundamentals of Database Management System

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **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, Categories of Data Models- Conceptual Data Models, Physical data Models, Representational Data Models, such as, Object Based Models, Record Based Models, Database Schema and Instance, Three Schema Architecture, Data Independence – Physical and Logical data Independence.
- Assignment-1**
- **Database Conceptual Modelling by E-R model:** Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.
 - **Enhanced E-R Modelling:** Aggregation, Generalization, Converting ER Diagrams to Tables.
 - **Relational Data Model:** Concepts and Terminology, Characteristics of Relations.
 - **Constraints: Integrity Constraints-** Entity and Referential Integrity constraints, Keys- Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys.

TILLMST-II

- **Relational Algebra:** Basic Operations, Additional Operations, Example Queries.
 - **Database Design:** Informal Design Guidelines for Relation Schemas, Problems of Bad Database Design,
- Assignment-2**
- **Normalization:** Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms– 1NF, 2NF, 3NF, Boyce-Codd NF,

TILLFINAL EXAM

- **MS-ACCESS:** introduction to MS-ACCESS, working with databases and tables, queries in Access, Applying integrity constraints, Introduction to forms, sorting and filtering, controls, Reports and Macro: creating reports, using Macros.

MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA II (Semester IV)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2015-16**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
January 2019				
1.	1. Old man and the Sea by Ernest Hemmingway	<i>Old man and the Sea by Ernest Hemmingway</i>	Lecture, Discussion Method,	
2.	Small words for big ones from the book Students Companion	<i>Living English Structure : W. Stannard Allen (Orient Longman)</i>		
4.	Short formal notice writing such as public, legal and memorandum			
February 2019				
5.	Two short formal classified advertisements and display advertisement	<i>Living English Structure : W. Stannard Allen (Orient Longman)</i>	Lecture, Discussion Method,	
6.	Report writing	<i>The Students' Companion by Wilfred D. Best</i>		
March 2019				
7.	Transforming one type of sentences	<i>The Students' Companion by Wilfred D. Best</i>		
April 2019				
8.	d) Transforming of	<i>The Students'</i>		

	Degree	Companion by Wilfred D. Best		
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BCA-222: Computer Networks

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Introduction to Computer networks**, Applications, Network hardware and Software (protocol hierarchies, design issues for layers,
 - **interfaces and services:** connection oriented and connection less), Network structure and architecture- point to point, multicast, broadcast,
 - **Classification of networks**-LAN, MAN and WAN. Reference models, the OSI reference model, TCP / IP reference model.Comparison between OSI and TCP / IP models.
- Assignment-1**
- **Data Link Layer:** Design issues, Services to network layer, Framing, Error control, Flow control
 - **Elementary data link protocols-** unrestricted simplex protocol, simplex stop and wait protocol, simplex protocol for a noisy channel.

TILLMST-II

- **Network layer:** Design issues, Services to the transport layer, Routing algorithms- Static/ non-adaptive and dynamic/adaptive algorithms. Congestion control algorithms – the leaky bucket algorithm, the token bucket algorithm.
- Assignment-2**
- **Transport layer**, design issues, connection management-addressing, establishing and releasing connection, transport layer protocols- TCP, UDP.
 - **Application layer:** The DNS Name Space, Electronic Mail, The World Wide Web,

TILLFINAL EXAM

- **Network security:** Introduction to cryptography, substitution ciphers, transposition ciphers, one-time pads, two fundamental cryptographic principles, public-key algorithms (RSA, other Public-key algorithms), digital signatures (symmetric-key signatures, public key-signatures, message digests

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-223: Management Information System

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Management Information system:** Meaning and definition, Role of information system, Nature and scope of MIS.
 - **Information and system concepts:** Definition and types of information, Information quality, dimensions of information, value of information, general model of human as an information processor. System related concepts, elements of a system, and types of system.
- Assignment-1**
- **Role and importance of Management:** Introduction, levels and functions of management.
 - **Structure and classification of MIS,** Components of MIS, Framework for understanding MIS: Robert Anthony’s hierarchy of management activity, Information requirements and levels of management.

TILLMST-II

- **Decision making concept,** types of decisions, methods of choosing among alternatives, Role of MIS in decision making.
 - **Simon’s model of decision making,** Structured and unstructured decisions.
- Assignment-2**
- **Development of MIS:** Stages in the development of MIS, System development approaches: Waterfall model, Prototyping, Iterative enhancement model, Spiral model.
 - **Applications of information systems in Functional areas:** Marketing MIS, Financial MIS, Production MIS, Personnel MIS.

TILLFINAL EXAM

- **Decision Support Systems:** Definition and characteristics, MIS versus DSS, Tools and Models for decision support.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-224: Computer Oriented Numerical and Statistical Methods

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Basics:** Floating point representation of numbers, arithmetic operation with normalised floating point numbers and its consequences, errors in numbers, binary representation of numbers.
- **Solution of transcendental equations:** Bi-section method, Regula-falsi method, Newton/Raphson method, Secant method
Assignment-1
- **Solution of simultaneous algebraic equations:** Gauss elimination method, pivoting, ill-conditioned equations, Gauss-Seidel iterative method, comparison of direct and iterative method.
- **Interpolation:** Lagrange's interpolation, Newton Interpolation
- **Curve Fitting:** Linear regression, Polynomial regression, Exponential Regression

TILLMST-II

- **Introduction to Statistics:** Meaning, scope, collection, classification of data. Application based on and processing logic of measures of central tendency, dispersion
Assignment-2
- **Bivariate Data:** Correlation, Meaning, and Type of correlation, correlation and causation, methods of studying correlation, algorithm to compute Karl Pearson's Correlation and rank correlation. Applications based on correlation.

TILLFINAL EXAM

- **Linear Regression:** Processing logic of and numerical based on fitting of regression lines (Using least square method).(Properties without Proofs)

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-225: Relational Database Management System with Oracle

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Relational Model:** storage organisations for relations, relational algebra - set operators, relational operators, relational calculus - domain calculus, tuple calculus.
- **Decomposition of Relation Schemes:** functional dependencies, multivalued dependencies, normal forms for relational schemes.
- **Relational Query Language:** DDL, DML, DCL.
Assignment-1
- **Database Integrity:** domain integrity, entity integrity, referential integrity.
- **Introduction to Oracle:** Oracle as client/server architecture, getting started, creating, modifying, dropping databases. Inserting, updating, deleting data from databases, SELECT statement, Data constraints (Null values, Default values, primary, unique and foreign key concepts)

TILLMST-II

- Computing expressions, renaming columns, logical operators, range searching, pattern matching, Oracle functions, grouping data from tables in SQL, manipulating dates.
Assignment-2
- **Working with SQL:** triggers, use of data base triggers, database triggers Vs. SQL*forms.

TILLFINAL EXAM

- **Types of triggers,** how to apply database triggers, BEFORE vs. AFTER triggers, combinations, syntax for creating and dropping triggers.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

MULTANI MAL MODI COLLEGE, PATIALA

UNIT PLAN

Class – BCA III (Semester V)

Subject : English Communication Skills

Subject Code:

Subject Teacher :Session : 2018-19

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
August 2018				
1.	Popular Short Stories (OUP)	<i>Popular Short Stories (OUP)</i>	Lecture, Discussion Method,	
2.	1. Words denoting number 2. Words denoting places 3. Words denoting professions and trades	Wilford D. Best: The Student's Companion (Rupa)		
3.	7. Words pertaining to marriage 8. Science and Arts 9. Words pertaining to the medical professions: (b) Words commonly mis-spelt (c) Antonyms and synonyms			
4.	A paragraph of about 150 words	W. Stannard Allan: Living English Structure (Orient Longman)		
September 2018				

5.	Comprehension	Wilford D. Best: The Student's Companion (Rupa)	Lecture, Discussion Method,	
6.	4. Name by which persons with certain characteristics are known. 5. Forms of Government 6. Words pertaining to the church			
7.	Translation from Punjabi/Hindi into English			
8.	Exercise 1.1 to Exercise 11.4	W. Stannard Allan: Living English Structure (Orient Longman)		
9.	Exercise 12.1 to Exercise 19.20			
October & November 2018				
10.	Exercise 20.1 to Exercise 23.8	W. Stannard Allan: Living English Structure (Orient Longman)		
11.	Exercise 24.1 to Exercise 27.6			
12.	Exercise 28.1 to Exercise 30.3			

BCA-III, Sem.-V**BCA-312: System Analysis and Design**

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Systems concepts:** Definition and characteristics of a system, Elements of a system, Types of systems.
 - **The system development life cycle:** Introduction to various phases.
 - **The role of the Systems Analyst:** Qualifications of a systems analyst, various roles of the systems analyst.
- Assignment-1**
- **Systems analysis:** Initial investigation, needs identification, determining the user's information requirements, Information-gathering tools.
 - **Structured analysis tools:** Data flow diagram, Data dictionary, Decision tree, Structured English, Decision tables.

TILLMST-II

- **Feasibility study:** Feasibility considerations, Steps in Feasibility analysis.
 - **Systems Design:** The process and stages of systems design, Input/output and forms design, Database design.
- Assignment-2**
- **Implementation and software maintenance:** Conversion, Post-implementation review. Software maintenance: maintenance or enhancement, Primary activities of a maintenance procedure.

TILLFINAL EXAM

- **Hardware and software selection:** Procedure and major phases in selection.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-313: Systems Software

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I		
<ul style="list-style-type: none"> • Introduction: Definition of system software, types of system software, features of system programming, system programming vs. application programming. • Language Processors: Introduction, Language processing activates, Fundamentals of Language Processing. Assignment-1 • Assembler: Elements of Assembly Language Processing, A simple Assembly scheme, Pass structure of Assemblers, Design of a two pass assembler. A brief overview of single pass assembly and problem of forward references. • Linkers and Loaders: Definition of linker and loader Design of Absolute Loader, Re-locatable Loader. 		
TILLMST-II		
<ul style="list-style-type: none"> • Compilers: Overview of Compilation Process, Scanning, Parsing (Top down and Bottom Up parsing), Intermediate code forms (variant I and II) intermediate code form for arithmetic expressions (postfix, prefix, triples, quadruples – concepts only), Assignment-2 • Code optimisation transformations (Compile time evaluation, Elimination of common sub-expression, Dead code elimination, Frequency reduction, strength reduction – concepts only), compiler vs. interpreter. 		
TILLFINAL EXAM		
<ul style="list-style-type: none"> • Software Tools: Software tools for program development, Editors, Debug monitors, Programming environments, User Interfaces.. 		
Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-314: Java Programming

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Introduction to java:** evolution, features, comparison with C and C++; Java program structure; tokens, keywords, constants, variables, data types, type casting, statements.
- **Operators and expressions:** arithmetic, relational, logical, assignment, increment, decrement, conditional, bitwise and special operators. Operator precedence & associativity rules.
Assignment-1
- **Control statements:** if else, switch case, for, while, do while, break, continue, labeled loops.
- **Class:** syntax, instance variable, class variables, methods, constructors, overloading of constructors and methods.

TILLMST-II

- **Inheritance:** types of inheritance, use of super, method overriding, final class, abstract class, wrapper classes
Assignment-2
- Arrays, Strings and Vectors, Packages and Interfaces, visibility controls
- **Errors and Exceptions:** Types of errors, Exception classes, Exception handling in java, use of try, catch, finally, throw and throws. Taking user input, Command line arguments.

TILLFINAL EXAM

- **Multithreaded Programming:** Creating Threads, Life cycle of thread, Thread priority, Thread synchronization, Inter-thread communication.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-315: Web Designing using HTML and DHTML

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I		
<ul style="list-style-type: none"> • Introduction to HTML: Basic HTML concepts, an overview of HTML markup. • What is good Web design; the process of Web publishing; implementation; the phases of Web site development; HTML's role in the Web; and issues facing HTML and the Web. • HTML overview: the structure of HTML documents; document types; the <HTML> element; the <HEAD> element; the <BODY> element; <p>Assignment-1</p> <ul style="list-style-type: none"> • Links and Addressing: Linking basics; what are URLs; linking in HTML; anchor attributes; images and anchors; image maps; semantic linking with the <LINK> element; meta-information; • HTML and Images: The role of images on the Web; image preliminaries; image downloading issues; obtaining images; HTML image basics; images as buttons; and image maps. • Introduction to Layout: Backgrounds, Colors, and Text; design requirements; HTML approach to Web design; fonts; colors in HTML; document-wide color attributes for <BODY>; and background images. Introduction to tables, LISTS; frames 		
TILLMST-II		
<ul style="list-style-type: none"> • Style Sheets: style sheets basics; style sheet example; style sheet properties; positioning with style sheets; • Basic Interactivity and HTML: Forms form preliminaries; the <FORM> element; form controls; <p>Assignment-2</p> <ul style="list-style-type: none"> • Introduction to Server-Side Programming: This chapter covers: overview of client/server programming on the Web; server-side programming; common gateway interface (CGI) 		
TILLFINAL EXAM		
<ul style="list-style-type: none"> • Dynamic HTML (DHTML): dynamic HTML and document object model; HTML and scripting access; rollover buttons; moving objects with DHTML; and ramifications of DHTML.. 		
Mode of Assessment		
Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

MULTANI MAL MODI COLLEGE, PATIALA**UNIT PLAN****Class – BCA III (Semester VI)****Subject : English Communication Skills****Subject Code:****Subject Teacher :Session : 2018-19**

S.No.	Syllabus/Topics	Reference	Mode of Transactions	Additional Resources*
January 2019				
1.	JagdishChander (OUP) (ed.): Short plays	<i>JagdishChander (OUP) (ed.): Short plays</i>	Lecture, Discussion Method,	
2.	Comprehension	Wilford D. Best: The Student's Companion (Rupa)		
3.	A paragraph of about 150 words			
4.	Précis	W. Stannard Allan: Living English Structure (Orient Longman)		
February & March 2019				
5.	Exercise 1.1 to 30.3 Exercise 31.1 to Exercise 32.4 Exercise 33.1 to Exercise 38.4 Exercise 39.1 to Exercise 44.10 Exercise 45.1 to Exercise 46.10	Wilford D. Best: The Student's Companion (Rupa)	Lecture, Discussion Method,	
6.	1) Words pertaining to death 2) Words pertaining to Nature Study 3) Opposites 4) Negatives			

7.	Translation from Punjabi/Hindi into English			
April 2019				
10.	5) Scientific Instruments 6) War Words 7) Literary 8) Miscellaneous	Wilford D. Best: The Student's Companion (Rupa)		

BCA-III, Sem.-VI

BCA-322: E-Commerce

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I
<ul style="list-style-type: none"> • Introduction to E-commerce: Definition of E-commerce, Advantages and disadvantages of E-commerce, E-commerce versus traditional commerce. • Internet and WWW, Electronic commerce framework, Electronic commerce and media convergence, The anatomy of E-commerce applications. <p>Assignment-1</p> <ul style="list-style-type: none"> • Architectural framework for E-commerce, World Wide Web as the architecture, Web background: Hypertext publishing, Security and the Web. • Consumer-oriented E-commerce: Consumer-oriented applications, Mercantile Process Models – consumer's perspective, Merchant's perspective.
TILLMST-II
<ul style="list-style-type: none"> • Advertising and Marketing on the Internet: The new age information based marketing, • Advertising on the Internet – Active or push-based advertising models, Passive or pull-based advertising models. Guidelines for Internet advertising. Online marketing process. <p>Assignment-2</p> <ul style="list-style-type: none"> • Types of Electronic Payment Systems, Digital token-based electronic payment systems, Smart cards and electronic payment systems, Credit card-based electronic payment systems, Risk and electronic payment systems. • Electronic Data Interchange and its applications in business.
TILLFINAL EXAM
<ul style="list-style-type: none"> • Legal, Ethical and other public policy issues related to e-commerce.
Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-323: Operating System

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Operating System** – Definition, Need, Services, Types of operating systems: simple batch system, multi programmed batch system, time sharing system, parallel system, distributed system, real time system, personal computer system. Operating system components, operating system services, system calls.
- **Process Management** – process definition, process state, process scheduling, operations on processes, Basic concepts of thread, Difference between process and thread.
Assignment-1
- **CPU Scheduling** – Basic concepts, scheduling criteria, scheduling algorithms – FCFS, SJF, Round Robin and Multilevel queue scheduling.
- **Deadlocks** – Characteristics of deadlocks, methods for handling deadlocks, deadlock prevention, deadlock avoidance

TILLMST-II

- **Memory Management** – Logical versus Physical address space, swapping, contiguous allocation, Paging, Concept of Virtual memory, Implementation by Demand Paging, Page replacement algorithms – FIFO, Optimal, LRU, Concept of thrashing.
Assignment-2
- **File Management** – Allocation methods: contiguous allocation, linked allocation and indexed allocation

TILLFINAL EXAM

- **Device Management** – Disk Scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK.

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-324: Software Engineering

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I

- **Introduction** – The Problem Domain, Software Engg.Challenges, Software Engg.Approach. Software development life cycle, its phases, **Software development process models: Waterfall**, Prototyping, Iterative;
- **Software Process-** Characteristics of software process, Project management process, Software configuration management process.
Assignment-1
- **Project Planning** – activities, COCOMO model. **Software Metrics** – Definition, Importance, Categories of metrics. **Software Quality** – Attributes,Cyclomatic complexity metric.
- **Software Requirements Analysis** – Need for SRS, Data flow diagrams, Data Dictionary, entity relationship diagram, Characteristics and components of SRS, validation, metrics
- **Software Design** – Design principles, Module-level concepts, Structure Chart and Structured Design methodology, verification, metrics: network metrics, information flow metrics.

TILLMST-II

- **Coding** – Programming Principles and Guidelines, Verification- code inspections, static analysis.
Assignment-2
- **Software Testing** – testing fundamentals, Black Box Testing: Equivalence class partitioning, Boundary value analysis, cause-effect graphing; White Box Testing: Control flow and Data flow-based testing, mutation testing; levels of testing, test plan, test case specification, test case execution and analysis,

TILLFINAL EXAM

- **Software maintenance** – Categories of maintenance.
- **Software Reliability** – Definition, uses of reliability studies

Mode of Assessment

Sr. No.	Component	Weightage
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

BCA-325: Web designing using ASP.NET

Max Marks: 75

Maximum Time: 3 Hrs.

TILLMST-I		
<ul style="list-style-type: none"> • Introduction to .net framework: - Genesis of.NET, Features, Advantages and disadvantages of .net framework. Common Language Runtime:-Common Type System, Common Language Specification, .Net binaries, Microsoft Intermediate Language, Meta Data, .Net types and .net namespaces. • Basics of ASP. NET: - Introducing ASP .NET– Creating ASP .NET applications using command line compiler and visual studio .net IDE. • Introduction to c#:- variables, Constants, Data Types, Operators, Control Structures and loops, Arrays, events. • Introduction to Classes and objects • Web forms, Standard Controls: - Display information, Accepting user input, Submitting form data, displaying images, using the panel control, using the hyperlink control. <p>Assignment-1</p> <ul style="list-style-type: none"> • Validation Controls: required field validation control, range validator Control, compare validator control, regular expression validator control, custom validator control, validation summary controls 		
TILLMST-II		
<ul style="list-style-type: none"> • Rich Web Controls: -Accepting file uploads, displaying a calendar, Displaying advertisement, displaying different page views, displaying a wizard. List Controls: Dropdown list control, Radio button, list controls. Grid View Controls: Grid view control fundamentals, using field with the grid view control, working with grid view control events extending the grid view control. Debugging, caching and deploying ASP .NET pages. <p>Assignment-2</p> <ul style="list-style-type: none"> • Master pages: - Designing Website with Master Pages: Creating master pages, Modifying master page content, Loading master page dynamically. ASP.NET security, localizing ASP .NET applications. • ADO.NET:- Changes from ADO to ADO.NET, ADO .NET Managed Providers – OleDb and SQL Managed Providers – OleDb Data Adapter Type. 		
TILLFINAL EXAM		
<ul style="list-style-type: none"> • SQL Data Source Control: Creating database connections, executing database commands, • Using ASP.NET parameters with the SQL data source controls, programmatically executing SQL data source commands, Caching database data with the SQL data Source controls. 		
Mode of Assessment		
Sr. No.	Component	Weightage

UNIT PLANNING(SESSION 2018-19)

1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

