

Semester

First

MATHEMATICS – I (BMCI101)

SECTION-A

SET THEORY AND RELATIONS

Sets- Elements of a set, methods of describing a set, types of sets, Operations on sets-- union, intersection and difference of sets, Venn diagrams, statement problems, Associative Laws, Distributive laws, DeMorgan"s laws, duality, partitioning of a set.

Relation -Basic definition of relation and types of relations, graphs of relations, properties of relations, (domain, range, inverse and composite relations), Matrix representation of a relation.

SECTION-B

ALGEBRA OF LOGIC, MATHEMATICAL INDUCTION

Propositions and Logic operations, truth tables, arguments and validity of arguments, propositions generated by a set, equivalence and implication laws of logic, mathematical system and propositions over a universe, Quantifiers, Principle of Mathematical Induction.

SECTION-C

GRAPH THEORY

Various types of graphs- Simple and multi graphs, directed and undirected graphs, Eulerian and Hamiltonian graphs, Graph connectivity, graph traversals, graph optimizations, graph coloring, Trees, spanning trees.

SECTION-D

RECURSION AND RECURRENCE RELATIONS

Recursion, many faces of recursion, recurrence relations, some common recurrence relations, Matrix Operations: Addition, Subtraction, Multiplication and Inverse

COMMUNICATION (BMCI102)

SECTION-A

English Language: Sentence, Parts of speech, Tenses, Active passive voice, Direct Indirect speech, Creative writing& vocabulary, Comprehension passage, Reading of biographies of at least 10 IT business personalities (can be a home assignment or classroom reading).

SECTION-B

Business communication-Types, Medias, Objectives, Modals, Process, Importance Understanding Barriers to communication & ways to handle and improve barriers.

SECTION-C

Presentation skills-Its Purpose in business world, How to find material for presentation, How to sequence the speech with proper introduction and conclusion, How to Prepare PPT& Complete set of required body language while delivering presentation.

Reading & writing skills- Importance of reading and writing, improving writing skills through understanding and practicing Notice, E-mail, Tenders, Advertisement, formal letter.

SECTION-D

Listening skills-Its importance as individual and as a leader or as a worker, Its types, barriers to listening & remedies to improve listening barriers.

Non verbal Communication- understanding what is called non verbal communication, its importance as an individual, as a student, as a worker and as a leader, its types.

**HUMAN VALUES & PROFESSIONAL ETHICS
(HVPE101)**

SECTION- A

Course Introduction – Need, Basic Guidelines, Content and Process for Value Education

- Understanding the need, basic guidelines, content and process for Value Education.
- Self Exploration–what is it?- its content and process; „Natural Acceptance“ and Experiential Validation- as the mechanism for self exploration.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations
- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
- Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
- Method to fulfill the above human aspirations: understanding and living in **harmony** at various levels

Understanding Harmony in the Human Being – Harmony in Myself!

- Understanding human being as a co-existence of the sentient „I“ and the material „Body“
- Understanding the needs of Self („I“) and „Body“ – *Sukh* and *Suvidha*
- Understanding the Body as an instrument of „I“ (I being the doer, seer and enjoyer)
- Understanding the characteristics and activities of „I“ and harmony in „I“
- Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
- Programs to ensure *Sanyam* and *Swasthya* (7)

Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

- Understanding harmony in the Family- the basic unit of human interaction
- Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*; Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
- Understanding the meaning of *Vishwas*; Difference between intention and competence
- Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
- Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
- Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family!

PART B

Understanding Harmony in the Nature and Existence – Whole existence as Co-existence

- Understanding the harmony in the Nature
- Interconnectedness and mutual fulfillment among the four orders of nature: recyclability and self-regulation in nature
- Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
- Holistic perception of harmony at all levels of existence

Implications of the above Holistic Understanding of Harmony on Professional Ethics

- Natural acceptance of human values
- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics:
 - Ability to utilize the professional competence for augmenting universal human order
 - Ability to identify the scope and characteristics of people-friendly and ecofriendly production systems
 - Ability to identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems
- Strategy for transition from the present state to Universal Human Order:
 - At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - At the level of society: as mutually enriching institutions and organizations

Punjab Technical University
Bachelor in Mobile Computing & Internet Batch 2014 onwards
Information Technology (BMCI103)

SECTION- A

Computer Fundamentals: Block structure of a computer, characteristics of computers, problem solving with computers, generations of computers, and classification of computers on the basis of capacity, purpose, and generation.

Number System: Bit, byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other, representation of characters, integers and fractions.

Binary Arithmetic: Addition, subtraction and multiplication.

SECTION-B

Memory Types: Magnetic core, RAM, ROM, Secondary, Cache, Bubble Memory.

Input and Output Units: Keyboard, Mouse, Monitor (CRT and LCD): Light pen, joystick, Mouse, Touch screen; OCR, OMR, MICR

Overview of storage devices: Floppy disk, hard disk, compact disk, tape.

Printers: Impact, non-impact, working mechanism of Drum printer, Dot Matrix printer, Inkjet printer and Laser printer.

Computer languages: Machine language, assembly language, higher level language, 4GL. Introduction to Compiler, Interpreter, Assembler, Assembling, System Software, Application Software.

SECTION- C

Operating system: Batch, multi-programming, time sharing, network operating system, on-line and real time operating system, Distributed operating system, multi-processor, Multi-tasking.

Graphical OS: Fundamentals of windows, types of windows, anatomy of windows, windows explorer, customizing windows, control panel, taskbar setting, Network Neighborhood.

Personal Productivity Software:

Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors.

Spreadsheet : Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs.

Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.

SECTION -D

Computer Network and Communication: Network types, network topologies, network communication devices, physical communication media.

Internet and its Applications: E-mail, TELNET, FTP, World Wide Web, Internet chatting; Intranet, Extranet, Gopher, Mosaic, WAIS.

Security management tools: PC tools, Norton Utilities, Virus, worms, threats, virus detection, prevention and cure utilities, Firewalls, Proxy servers.

**PROGRAMMING IN C
(BMC1104)**

SECTION-A

Algorithm and Programming Development: Steps in development of a program, Flow charts, Algorithm Development, Program Debugging, Compilation and Execution.

Fundamentals of „C“: I/O statements, Assignment Statements, Constants, Variables, Operators and Expressions, Standards and Formatted statements, Keywords, Data Types and Identifiers.

SECTION-B

Control Structures: Introduction, Decision making with if – statement, if-else and Nested if, while and do-while, for loop. Jump statements: break, continue, goto, switch Statement

Functions: Introduction to Functions, Function Declaration, Function Categories, Standard Functions, Parameters and Parameter Passing, Call – by value/reference, Recursion, Global and Local Variables, Storage classes.

SECTION-C

Arrays: Introduction to Arrays, Array Declaration, Single and Multidimensional Array, Memory Representation, Matrices, Strings, String handling functions.

Structure and Union: Declaration of structure, Accessing structure members, Structure Initialization, Arrays of structure, nested structures, Unions

SECTION-D

Pointers: Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers, Assignment through pointers, Pointers and Arrays

Files: Introduction, Creating a data file, opening and closing a data file, processing a data file.

Preprocessor Directives: Introduction and Use, Macros, Conditional Preprocessors, Header Files

SOFTWARE LAB-I (Information Technology)
(BMCI105)

This laboratory course will mainly comprise of exercise on what is learnt under the paper: (BMCI104)

- 1. Familiarizing with PC and WINDOWS commands,**
- 2. File creation,**
- 3. Editing**
- 4. Directory creation.**
- 5. Mastery of DOS internal & external commands.**
- 6. Learning to use MS Office: MS WORD, MS EXCEL & MS PowerPoint.**

SOFTWARE LAB-II (Programming in C)

(BMCI-106)

This laboratory course will mainly comprise of exercise on what is learnt under the paper:
(BMCI105)

1. **Keywords and Identifiers:** introduction, purpose
2. **Variables and constants:** data types, Initialization, declaration, scope, memory limits
3. **Input-output statements:** formatted and non-formatted statements
4. **Operators:** Arithmetic, logical, conditional, assignment, bitwise, increment/decrement operators
5. **Decision Making:** switch, if-else, nested if, else-if ladder, break, continue, goto
6. **Loops:** while, do-while, for
7. **Functions:** definition, declaration, variable scope, parameterized functions, return statement, call by value, call by reference, recursive functions
8. **Pre-processor Directives:** Pre-processor directives like INCLUDE, IFDEF, DEFINE, etc
9. **Header Files:** STDIO.H, MATH.H, STRING.H, PROCESS.H etc
10. **Arrays:** Array declarations, Single and multi-dimensional, memory limits, strings and string functions
11. **Pointers:** Pointer declarations, pointer to function, pointer to array/string,
12. **Files:** Creation and editing of various types of files, closing a file(using functions and without functions)