Department of Computational Sciences
Bachelor of Computer Application

Semester I						
Sl. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory						
1	BCAN101	Digital Electronics	3	1	0	4
2	BCAN102	Programming for Problem Solving	3	0	0	3
3	BMN101	Basic Mathematical Computation	3	1	0	4
6	HUM101	Soft Skills	3	0	0	3
Practical						
1	BCAN192	Programming for Problem Solving Lab	0	0	4	2
2	BCAN181	PC Software Lab	0	0	4	2
3	HUM191	Soft Skills Lab	0	0	4	2
			Total Credit			20

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Course Name: Digital Electronics

Course Code: BCAN101

Contact: 3L+1T

Credits: 4

Allotted Hrs: 36

UNIT I:: Number Systems & Codes [5L]

Decimal Number, Binary Number, Octal Number, Hexadecimal Number, Conversion – Decimal to Binary, Binary to Decimal, Octal to Binary, Binary to Octal, Hexadecimal to Binary, Binary to Hexadecimal, Octal to Binary to Hexadecimal, Hexadecimal to Binary to Octal; Floating Point Number Representation, Conversion of Floating Point Numbers, Binary Arithmetic, 1's and 2's Complement, 9's and 10's Complement, Complement Arithmetic, BCD, BCD addition, BCD subtraction, Weighted Binary codes, Non-weighted codes, Parity checker and generator, Alphanumeric codes.

Unit II: Logic Gates [2L]

OR, AND, NOT, NAND, NOR, Exclusive – OR, Exclusive – NOR, Mixed logic.

UNIT III: Boolean Algebra [4L]

Boolean Logic Operations, Basic Law of Boolean Algebra, Demorgan's Theorem, Principle of Duality.

UNIT IV: Minimization Techniques [3L]

Sum of Products, Product of Sums, Karnaugh Map [up to 4 variables].

UNIT V : Multilevel Gate Network [2L]

Implementation of Multilevel Gate Network, Conversion to NAND-NAND and NOR-NOR Gate Networks.

UNIT VI: Arithmetic Circuits [5L]

Half Adder, Full Adder, Half Subtractor, Full Subtractor, Carry Look Ahead Adder, 4-Bit Parallel Adder

UNIT VII:Combinational Circuits [5L]

Basic 2-input and 4-input multiplexer, Demultiplexur, Basic binary decoder, BCD to binary converters, Binary to Gray code converters, Gray code to binary converters, Encoder.

UNIT VIII:Sequential Circuits [5L]

Introduction to sequential circuit, Latch, SR Flip Flop, D Flip Flop, T Flip Flop, JK Flip Flop, Master Slave Flip Flop

UNIT IX : Basics of Counters [2L]

Asynchronous [Ripple or serial] counter, Synchronous [parallel] counter

UNIT X: Basics of Registers [3L]

SISO, SIPO, PISO, PIPO, Universal Registers

Suggested Readings:

1. Digital Circuit & Design, Salivahan,VIKAS

2. Digital Design, M. Morris. Mano & Michael D. Ciletti, PEARSON

3. Fundamentals of Digital Circuits; Anand Kumar; PHI

4. Digital Electronics; Tokheim; TMH

5. Digital Electronics; S. Rangnekar; ISTE/EXCEL

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Course Name: Programming for Problem Solving
Course Code: BCAN102
Contact: 3L
Credits: 3
Allotted Hrs: 36

UNIT I: Programming Basics [2L]
Problem analysis, Flowchart, algorithms, Pseudo codes, structured programming, Example of Flowchart and Algorithm representation, Brief History of Development of C language, Features of C language, Process of compiling and running a C program.

UNIT II: Variable and Constants [3L]
Definition of Tokens, variables, Constant, Classification of constants, data types [Primary data types, User defined data types, Derived data types]

UNIT III: Operators and Expressions [4L]
Different types of Operators [Arithmetic, Relational, Logical, Assignment, Increment and Decrement,Conditional, Bitwise, Special, expressions, type conversion, Operator precedence, associatively rules on operators.

UNIT IV: Formatted Input/output [4L]
scanf[] Format code, printf[] Format code, reading and writing character variable, character testing functions [isdigit[], islower[], isupper[], tolower[], toupper[]].

UNIT V: Decision Making And Branching [4L]
If statement, if..else, Nested if ..else, else if ladder, switch, ternary operator, goto statement [forward and backward jump]

UNIT VI: Looping [5L]
Different types of loop [while, for, do], entry control loop , exit control loop, Applying break and continue within loop.

UNIT VII: Array [4L]
One dimensional array , Two dimensional array, Example using integer and floating array.

UNIT VIII: String [3L]
Character Array, Library functions related to string [strcat[], strcmp[], strcpy[], strlen[]]

UNIT IX: Function [4L]
Definition, Standard library functions, user-defined functions, recursion, scope of variables in
function [auto, extern, static, register]

UNIT X: Pointer And Header File [3L]
Pointer Definition, pointer expression, pointer to an array, pointer to a function. Definition

of Header file, Use of header files, Different header files.

Suggested Readings:

1. Programming in ANSI C by E Balagurusamy
2. Programming With C, Gottfried, TMH
3. The C Answer Book, Tondo, PHI
4. Programming & Problem Solving Through C Language, EXCEL BOOKS

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Course Name: Basic Mathematical Computation

Course Code: BMN101

Contact: 3L+1T

Credits: 4

Allotted Hrs: 36

UNIT I: Linear Algebra [12L]

Determinant and its properties [up to third order], Minor and cofactors, Matrices, addition, multiplication and transpose of a matrix, Symmetric and skew-symmetric matrices and their properties, Adjoint, Inverse matrix, Solution of linear equations in three variables by Cramer's rule and matrix inversion method, Permutation and Combinations, Binomial theorem.

UNIT II: Two Dimensional Geometry [8L]

Locus, Straight lines, Circle, Conic section. Transformation of axes, Plane polar curves.

UNIT III: Differential Calculus [12L]

Limits of function and continuity, fundamental properties of continuous functions [without proof], Derivatives, Geometric meaning of derivative, successive differentiation, Rolle's theorem, Mean value theorems, Taylor's and Maclaurin's theorem, Taylor's series, Functions of several variables, Limit and Continuity, Partial derivatives, Total differential, Euler's theorem on
homogeneous functions of two variables. Tangents and normals.

UNIT IV: Integral Calculus [8L]

Indefinite integrals, Definite integrals and their elementary properties, Definite integral as the limit of sum, Idea of improper integrals. Area under a plane curve.

Suggested Readings:

1. Higher Algebra, S. K. Mapa, Levant Books.
2. Advanced Higher Algebra, Chakravorty and Ghosh, U N Dhar Pvt. Ltd.
3. Coordinate Geometry, S. L. Loney
4. Integral Calculus, Das and Mukherjee, U N Dhar Pvt. Ltd.
5. Differential Calculus, Das and Mukherjee, U N Dhar Pvt. Ltd.
6. Advanced Engineering Mathematics, E Kreyszig, Wiley

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Course Name: Soft Skills
Course Code: HUN101
Contact: 3L
Credits: 4
Allotted Hrs: 36

Unit I: Grammar [6L]
Correction of sentence, Vocabulary / word formation, Single word for a group of words, Fill in the blank, transformation of sentences, Structure of sentences – Active / Passive Voice – Direct / Indirect Narration.

Unit II: Essay Writing [5L]
Descriptive – Comparative – Argumentative – Thesis statement- Structure of opening / concluding paragraphs – Body of the essay.

Unit III: Reading Comprehension [5L]
Global – Contextual – Inferential – Select passages from recommended text .

Unit IV: Business Correspondence [5L]
Letter Writing – Formal.Drafting.Biodata- Resume'- Curriculum Vitae.

Unit V: Report Writing [5L]
Structure , Types of report – Practice Writing.

Unit VI: Communication skills [5L]
Public Speaking skills , Features of effective speech, verbal-nonverbal.

Unit VII: Group discussion [5L]
Group discussion – principle – practice .

Reference Books:

1. Mark MaCormack : "Communication"
2. John Metchell" How to write reports"
3. S R Inthira&amp, V Saraswathi" Enrich your English – a] Communication skills b] Academic skills " Publisher CIEFL &amp, OUP

4. R.C. Sharma and K.Mohan , “Business Correspondence and Report Writing “ , Tata McGraw Hill , New Delhi , 1994
5. L.Gartside , “Model Business Letters” , Pitman , London , 1992
6. Longman , “Longman Dictionary of Contemporary English” [or ‘Oxford Advanced Learner’s Dictionary of Current English’ , OUP , 1998.
7. Maxwell Nurnberg and RosenblumMorris , “All About Words” , General Book Depot, New Delhi , 1995
8. A Text Book for English foe Engineers &amp, Technologists

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL
NH-12 [Old NH-34], Simhat, Haringhata, Nadia -741249

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Course Name: Programming for problem solving Lab

Course Code: BCAN192

Contact: 4P

Credits: 2

UNIT I: Programming Basics

Write C program to -Implement [main[], printf, scanf] , Print your [name , college name and address], Input an integer number and print it, Input two integer numbers and find sum and difference, Input floating point number and print it, Understand the purpose of header files such as <stdio.h> and <conio.h>

UNIT II: Variable and Constants

Write C program to - Declare variable of different data types and print them, Implement different types of integer and floating point constants

UNIT III: Operators and Expressions

Write C program to - Input integer number and apply different arithmetic operators [+,-,*,/,%], Implement ++ and – operators, Implement assignment operators, Implement bitwise operators.

UNIT IV: Formatted Input/output

Write C programs to - Input character constant and print, Implement scanf[] Format code, Implement printf[] Format code, Implement isdigit[], islower[], isupper[], tolower[] and other functions within
<ctype.h>

UNIT V: Decision Making and Branching

Write C programs to – Implement relational operators using if statements, Implement logical operators using if statements, Implement simple if statement, Input two number and find larger number, Input three numbers and find largest, Implement else if ladder, Implement switch ... case, Input two numbers and find larger number using ternary operator, Implement nested ternary operator, Implement pseudo loop using goto statement.

UNIT VI: Looping

Write C programs to - Implement while loop, Implement for loop, Implement do-while loop, Print all even numbers from 2 to 20, Print all odd numbers from 1 to 30, Print all prime numbers from 1 to 50, Print the first 15 Fibonacci terms, Implement nested loop, Print different number patterns, Apply break statement within a loop, Apply continue statement within a loop, Input a 3-digit number to find sum of digits, Input a 3-digit number and print in reverse order, Find factorial of a number.

UNIT VII: Array

Write C programs to - Implement an array arr[10] scanf value and print, Implement an array arr[10] scanf value and print value in reverse order, Implement an array arr[3][3] scanf value and print values, Find the sum of even and odd numbers within an array separately, Find the row wise sum of an 2-d array arr[4][4].

UNIT VIII: String

Write C programs to - Implement scan and print string, implement different string functions such as strcat[], strcmp[],
strcpy[], strlen[] ,Note - include<string.h> in the programs.

UNIT IX: Function

Write C program to –Implement different library functions, Implement UDF with no argument and no return type, Implement UDF with argument and no return value, Implement UDF with argument and with return value, Implement UDF with no return value and with return value, Implement auto, extern, static and register variables, Implement chaining of UDF, Implement recursion to find factorial.

UNIT X: Pointer and Header File

Write C program to -Implement Pointer, Implement pointer expression, Implement pointer to an array, Implement pointer to a function, Implement simple macro, Implement nested macro.

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Course Name: PC SoftwareLab

Course Code: BCAN181

Contact: 4P

Credits: 2

UNIT I: Introduction to Software [Windows 7, Office 2010 [or, respective higher versions]]

Introduction to Windows 7 – Change Date and Time, Task Bar, Start Button,
Creating a File and folder, Saving/Renaming, Moving Files, Renaming, Making a Copy, Copy Files
onto a disk Shortcuts, Deleting, Trash Finding Lost or Misplaced Files, Folders and Printing of documents Basic Internet, Email and protection of PC Windows Settings

UNIT II: Microsoft Word

Ribbon, Command Tabs, Hiding the Ribbon, Quick Access Toolbar, Office Menu
Starting a new Document, Saving a document, Previewing a document, Printing a document Text, Formatting text, Text Boxes, Inserting Clip Art, Working with shapes, Line and Paragraph
Spacing Selecting Text, Cut, Copy, Paste, Font, Size, Color, Bold, Italics, Underline Spelling and
Grammar Check, Auto Correct, Auto Format Indenting Paragraphs, Paragraph Borders and Shading, Paragraph Alignment and Breaking Creating a table, Editing a table, Sizing a table, Formatting a table Inserting pictures, Setting picture position and text wrapping, Resizing and
cropping Using clip art organizer, Creating with Word Art Columns, Headers and Footers, Applying Styles and themes, Mail Merge

UNIT III: Microsoft Excel:

Introduction to MS Excel 2010, Cells, Rows, and Columns, Sheet Tabs, Labeling and Naming Worksheets, Adding and Deleting Worksheets, Hiding/ Unhiding Worksheets, Hiding Columns and
Rows, Saving Workbooks Printing Worksheets and Workbooks, Select Print Area , Print a Range of Pages, Printing Copying Cells, Rows, and Columns, Pasting Cells, Rows, and Columns, Inserting and Deleting Rows and Columns, Insert Cells Filling Cells with a Series of Data, Editing Cell Data, Find and Replace, Go To Locking Rows and Columns By Splitting Panes,
Freezing Panes Change Font Styles and Sizes, Adding Borders and Colors to Cells, Changing Column Width Changing Row Height, Merge Cells, Applying Number Formats, Creating Custom
Number Formats Align Cell Contents, Cell Styles, Conditional Formatting Header and Footer, Adding Images, Modifying Images, Rotating an image, Compressing a Picture Adding WordArt,
Inserting AutoShapes, Adding Clip Art, Adding a Hyperlink, Embedding an Object Charts,

Chart Tools,
Modifying and Moving a Chart, Organizational Charts Formulas and Calculations, Mathematical
operators, Creating a Formula Absolute, Relative and Mixed Cell References Excel Forms, Using
Data Forms, Entering Data Using a Data Form Entering Data into a Table, Sorting Data into a Table,
Filters Data Validation, Auditing, Trace Precedents and Dependents Protecting a Workbook, Importing and Exporting Data, Course Materials

UNIT IV: MS PowerPoint :
Open & close presentations, Create a presentation,Apply design themes, Specify slide transitions
& timings, Set up a slide show, Preview, print & run presentations Rearranging and deleting slides, Using slides from other presentations Formatting slides, Formatting text, Formatting paragraphs, Adding shapes, Modifying objects, Using text in objects WordArt, Pictures, Clip art,
Tables, Charts, Diagrams Templates and themes, Slide masters, Transitions and timings, Speaker notes, Slide shows

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Course Name: Soft Skill Lab

Course Code: HUN191

Contact: 4P

Credits: 2

1. Honing 'Listening Skill' and its sub skills through Language Lab Audio device.
2. Honing 'Speaking Skill' and its sub skills.
3. Helping them master Linguistic/Paralinguistic features [Pronunciation/Phonetics/Voice modulation/ Stress/ Intonation/ Pitch &Accent] of connected speech.
4. Honing 'Conversation Skill' using Language Lab Audio –Visual input, Conversational Practice Sessions [Face to Face / via Telephone , Mobile phone & Role Play Mode].
5. Introducing 'Group Discussion' through audio –Visual input and acquainting them with key strategies for success.
6. GD Practice Sessions for helping them internalize basic Principles [turn- taking, creative intervention, by using correct body language, courtesies & other soft skills] of GD.
7. Honing 'Reading Skills' and its sub skills using Visual / Graphics/Diagrams /Chart Display/Technical/Non Technical Passages, Learning Global / Contextual / Inferential Comprehension.
8. Honing 'Writing Skill' and its sub skills by using Language Lab Audio –Visual input, Practice Sessions.