Subject Name	L	T	P	Credit
Computer Fundamental	3	1	4	6

Unit I
Introduction to Computers: Introduction, Characteristics of Computers, Block diagram of computer, Generation of Computers, Types of computers, Mini Computers, Micro Computers, Mainframe Computers, Super Computers etc., Input Devices: Keyboard, Pointing and draw devices: Mouse, Joystick, Track Ball, Light Pen, Data Scanning devices: Image Scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader, Voice Recognition Device, Digitizers, Output Devices: Monitor, Printer: Laser Printer, Dot matrix Printer, Ink Jet Printer etc., Audio Output, Projector, Applications of Computers.

Unit II
Number System: Decimal, Binary, Octal, Hexadecimal, Conversions of number systems. 1's complement and 2's complement representation. **Computer Architecture:** Introduction, Central Processing Unit (CPU) Memory, Registers, Instruction Format, Instruction Set, Processor Speed, Memory Measuring Units, Primary Memory: Introduction, Random Access Memory (RAM), Types of RAM, Read Only Memory (ROM), Types of ROM, Secondary Storage: Introduction, Hard Disk Drive, Magnetic Tape, Magnetic Disk, Optical Disk: Floppy Disk, CD, DVD etc.

Unit III
SDLC: Software development life cycle, Algorithm**:** Definition, Characteristics, Advantages and disadvantages, Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages. **Computer Software:** Introduction, Software: Definition, Relationship between Software and Hardware, Software Categories, System Software, Application Software.

Unit IV
Computer Languages: Machine lanuage, Assembly language, High level language, Program Language Translators: Assembler, Compiler, Interpreter, **Programming Languages**: Introduction, Evolution of Programming Languages, Classification of Programming Languages, Generations of Programming Languages, Features of a Good Programming Language, What are the characteristics of a good program, Top-down design, Bottom-up design.

Unit V
Operating System: Introduction, Operating System, Evolution of Operating System, Types of Operating System, Functions of an Operating System, **Dos**–History, Files and Directories, Internal and External Commands, Batch Files, etc. **Networking Basics:** Introduction, Types of Networks, Topology, Client-Server Concepts.

Reference Books:

1. Computer Fundamental Organization, B. Ram
2. Computer Fundamentals, Anita Goel, Pearson, 2010.
3. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
4. Fundamental of Computers – By P.K. Sinha
5. Computer Today- By Suresh Basandra
6. Computer Networks- By Andrew S. Tanenbaum

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Subject Name	L	T	P	Credit
Business Automation Tools	3	1	4	6

Unit I
Nature And Scope of Business: Meaning And Definition of Business, Characteristics, Objectives of Business, Classification of Business Activities, Industry, Commerce & Trade, Social Responsibility of Business Towards Different Groups.
Forms of Business Units: Sole Trader, Partnership, Joint Stock Company and Co-Operative Society – Meaning, Characteristics, Advantages & Disadvantages.

Unit II
MS Windows: Introduction to windows, Version of windows, Features of windows, My computer and various icons and their use, Working procedure of windows, Tool bars and dialog boxes, Creating files and folders, shutting down computer, Changing desktop background, Setting screen saver, Control panel and various icons, Internet setting, Installation procedure of new hardware or software, Uninstall an existing program, Accessories, Shortcut keys for various operations.

Unit III
MS Word- Introduction, Various features, Shortcuts, menus and all options of each menu, MS Word toolbars and commands, Text editing tools, Formatting tools, Image drawing tools, Table creation, Header and Footer, Find and replace, spell check, Mail merge, Bullets, Numbering, Hyperlinks, Page formatting and styles, Password protection, Different Page views and page break, Writing in columns, Printing commands, Print preview, Shortcuts of various commands

Unit IV
MS Excel- Introduction, Excel spreadsheet, Cell, Row and Column formatting, menus and all options of each menu, Working with data and range, borders and shading, Various Formulas and calculations, conditions, loops, Filter, Freezing a cell, sorting a column or row data, working with charts, Printing of workbook and worksheets etc.

Unit V
MS PowerPoint- Introduction, Area of use, Various menus and their options, Adding a new slide, working with slides, Slide layout, Design, Creating a new presentation, Different layouts, Adding Sound to presentation, Movie presentation, Applying animation to a slide, Adding diagrams and pictures to slide, Slide show and various views, Printing a presentation, Preparing handouts.

Reference Books:

1. Windows XP Complete reference, BPB publications.
2. MS Office XP Complete reference, BPB publications.
3. MS Windows XP Home edition complete, BPB completion.

List of Experiments
1. Meaning and definition of business.
2. Classification of business activities.
3. Study of all the versions of windows.
4. Shortcut keys of various operations.
5. Steps to change desktop background and screen saver.
6. Study of advance features of MS word.
7. Steps of Mail Merge.
8. Shortcut for various commands.
9. Study about macros and use.

10. Study of MS Excel.
11. Excel function and their use.
12. Creating Excel sheet to find students total marks and their percentage.
13. Working in visual basic editor "Condition and Loops".
14. Freezing a cell in MS Excel.
15. Sorting column or row data.
16. Difference between worksheet and workbook.
17. Insert chart in Excel.
18. Creating new power point presentation.
19. Adding sound to presentation.
20. Applying animation to the slide.
21. Creating Google doc and share it with different people with different access permissions.

Subject Name	L	T	P	Credit
Computer Hardware Basics Lab	-	-	8	4

List of Experiments

1. Study of Hardware devices like keyboard, Mouse, Monitor, CD –ROM etc.
2. Study of Motherboard and its components.
3. Assembling and disassembling a computer.
4. Study of BIOS settings.
5. Formatting and partitioning Hard disk.
6. Installation of Windows Operating system.
7. Installation of Linux Operating system.
8. Installation of various device drivers like printer, scanner, webcam and motherboard etc.
9. Installation of utility software like MS-Office, Photoshop, PDF Readers.
10. Study of Computer Network LAN, MAN, WAN and various networking cables and networking devices.
11. Study of IP-Addressing Schemes.
12. Creating LAN using crossover cable and straight through cable.
13. Sharing and Mapping printer, drives and folders in computer network.
14. Making image of a system.
15. Making bootable pen drive.
16. Accessing Remote Computer using team weaver and windows remote desktop.
17. Study of troubleshooting of hardware and software generated problems.

Subject Name	L	T	P	Credit
Business Communication	3	1	-	4

Unit - I Fundamentals of Language & Vocabulary

Applied Grammar and usages - Parts of Speech, Determiners, Tenses, Subject-Verb Agreement, Prepositions, Active and Passive Voice, **Reported Speech**: Direct and Indirect, Sentence Structure, Punctuations.

Vocabulary: Origin of words, affixation, Antonyms, Synonyms, one-word substitute, phrasal verbs, idioms, proverbs and jargons.

Unit – II Application of Linguistic ability

Linguistic techniques, English phonetic symbols or signs, Phonetic Transcription, Writing of Definitions of Related terms, objects, processes and principles, Paragraph writing, Precise writing and noting.

Unit – III Skills of Communication

Scope and Significance of Communication Skills, Process of Communication in an Organisation, Types of Communication: Verbal and Non-Verbal Communication, Formal and Informal Channels of Communication, Barriers to communication, Measures to overcome Barriers, Need for Effective Communication, Listening skills.

Unit – IV Developing Writing Skills

 Business Letters: Parts & Layouts of Business Letters, Calling/ Sending Quotations/ Tenders/Orders/ Complaints, Report Writing (Progress, Observation, Survey, Project and Laboratory).

Unit – V Employability And Corporate Skills

Interview skills, Group Discussion, Job Application, CV Writing, Memos and Email writing, Time management and Effective Planning, Negotiation skills, Teamwork, leadership.

References: A.J. Thomson and A.V. Martinet, A Practical English Grammar, Business Correspondence and Report Writing - By Sharma; TMH. Living English Structure – By W.S. Allen; Longmans

English Grammar – Ehrlich, Schaum Series; TMH. Spoken English for India – By R.K. Bansal and IB Harrison Orient Longman. New International Business English – by Joans and Alexander; OUP. Communication Skills – Dr Neeta Sharma, Effective Technical Communication – Rizvi; TMH. Communication for Science & Engineering, by Dr Binod Mishra, Business Communication by Dr R.C. Sharma.

Subject Name	L	T	P	Credit
Mathematics & Statistics	3	1	-	4

Unit I: SETS AND RELATIONS
Set Theory: Definition of sets, countable and uncountable sets, Venn Diagrams, proofs of some general identities on sets. Relation: Definition, types of relation, composition of relations, Pictorial representation of relation, Equivalence relation, Partial ordering relation.

Unit II: GRAPH THEORY
Introduction and basic terminology of graphs, Planer graphs, Multi graphs and weighted graphs, Isomorphic graphs, Paths, Cycles and connectivity, Shortest path in weighted graph, Introduction to Eulerian paths and circuits, Hamiltonian paths and circuits, Isomorphism and Homomorphism of graphs.

Unit III: ERRORS AND SOLUTION OF TRANSCENDENTAL EQUATIONS
Errors & Approximations, Solution of Algebraic & Transcendental Equations: Regular Falsi, Newton- Raphson, Solution of simultaneous linear equations by Gauss Elimination, Gauss Jordan, and Gauss- Siedel Iterative methods.

Unit IV: PROBABILITY
Significant digits and rounding of numbers, data collection, Measures of central tendency, measures of dispersion, Mean, Median, Mode, Range, Standard deviation, Mean deviation, Quartile deviation, Coefficient of Range, Coefficient of QD & QV, Coefficient of Variation, Skewness, Dispersion.

Unit V:
Probability and events, probability distributions, Elements of binomial and poisson distribution, Normal distribution curve and properties, Karl Pearson Coefficients of Correlation or covariance, Rank Correlation Methods, Regression, Properties of Regression Coefficients, Curve Fitting (Method of Least Square).

Reference Books:

1. Advance Engg. Mathematics. By Ramana, Tata McGraw hill.
2. Higher Engineering Mathematics by BS Grewal, Khanna Publication.
3. Advance Engineering Mathematics by D. G. Guffy.
4. Engineering Mathematics by S S Sastri. P.H.I.
5. Mathematics for Engineers by S.Arumungam, SCITECH Publuication.
6. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India.
7. Deo, Narsingh, "Graph Theory With application to Engineering and Computer Science.", PHI

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Subject Name	L	T	P	Credit
Bridge Course – I(Mathematics)	3	1	-	4

Unit I: Differential Calculus
Concept of real function, its domain and range, modulus function, greatest integer, function and signup function, the graphs of functions, composite functions. Meaning of limit, existence theorem for limits, fundamental theorems on limits (statements only). Continuity, differentiability, Exponential and logarithmic functions, Logarithmic differentiation, Derivative of functions in parametric forms, Second order derivatives.

Unit II: Integral Calculus
Integration as the inverse of differentiation, indefinite integral or anti-derivative, properties of integrals. Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions, integration by, substitution, integration by parts, Definite integral, definition as the limit of a sum, fundamental theorem of integral calculus, evaluation of definite integrals. Transformation of definite integrals by substitution, improper integral of the first and second kind and their evaluation.

Unit III: Differential Equations
Definition order and degree, general and particular solution, formation of a differential equation whose general solution is given, solution of differential equation by the method of separation' of variables, homogeneous differential equations, linear differential equations.

Unit IV: Matrices and Determinants
Matrices: Matrix as a rectangular arrangement of numbers, types of matrices, equality of matrices. Addition, scalar multiplication and multiplication of matrices, statement and of non -commutatively and associativity of matrix multiplications (no proof).
Determinants: Expansion rule**,** minors and cofactors of a determinant, determinant of a matrix, singular and non-singular matrices, application of determinants in the solution of equation and areas of triangle Cramer's rule, adjoint, and inverse of matrices in Solving Simultaneous equations in two or three variables, consistency and inconsistency of equations.
Note : In the treatement, upto 3x3 determinantand matrices should be considered

Unit V: Probability and Statistics
Bivariate frequency distribution, marginal and conditional frequency distribution, relationship between two variable, Scattet diagram, covariance, Karl Pearson's coefficient of correlation, its interpretation and limits, linear regression, relation between regression and correlation, least squares method of equations of lines of regression, point of intersection of lines of regression. **Probability Theory:** Multiplications theorem on probability, Conditional probability, Independent events, Baye's theorem. Random variable and its probability distribution, Bernoulli trials and Binomial distribution.

Reference Books:

1. Mathematics by R. D. Sharma