

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

Course Objective: - Communication skills are important for many professions but are crucial for students to develop their personality. They must be able to adapt their methods of communication to all regardless of ability or learning style.

- Students will demonstrate competency in communication skills related to production and presentation of messages in multiple formats.
- Students will demonstrate competency in critical thinking skills related to the analysis, interpretation, and criticism of messages.
- Students will demonstrate an understanding of multiple theoretical perspectives and diverse intellectual traditions in Communication.
- Students will demonstrate competency in human relational interaction.
- Students will demonstrate competency in the analysis and practice of ethical communication.
- Students will demonstrate an understanding of the importance of free expression and the responsibilities it entails.

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	Credits
Physics-I (MECHANICS)	3	1	4	6

Course Objectives:

- The students will introduce about the forces, angular momentum and knowledge about the constraint.
- Be able to classify the different forms of energy and use the conservation of energy to work problems
- The course will give knowledge about the general parameter like velocity, acceleration.
- The course provides the students about the knowledge of gravitation and their laws.
- The course provides the students about the knowledge of Elasticity and their laws.

Unit-1

Vectors: Vector algebra, Scalar and vector product, Laws of Motion, Frames of reference. Newton's Laws of motion, Dynamics of a system of particles, Centre of Mass, theory of relativity.

Unit-2

Momentum and Energy: Conservation of momentum. Work and energy, Conservation of energy, Motion of rockets, Rotational Motion, Angular velocity and angular momentum, Torque, Conservation of angular momentum.

Unit-3

Gravitation: Newton's Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws, Satellite in circular orbit and applications.

Unit-4

Oscillations: Simple harmonic motion, Differential equation of SHM and its solutions. Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations.

Unit-5

Elasticity: Hooke's law- Stress-strain diagram - Elastic moduli-Relation between elastic constants- Poisson's Ratio-Expression for Poisson's ratio in terms of elastic constants- Work done in stretching & work done in twisting a wire- Twisting couple on a cylinder- Determination of Rigidity modulus, young's modulus, bulk modulus Determination of Rigidity modulus and moment of inertia - q , η & σ by searles method

Text Books

1. Arken, weber and Harris, Mathematical methods for Physicists, Elsevier.
2. L.D. Landau and E. M. Lifshitz, Mechanics: course of theoretical Physics Vol 1, Pergamon press.
3. R. C. Brown, Mechanics and properties of matter, Longmans Green & Co.
4. M. Ghosh and D. Bhattacharya, A text book of oscillations waves and acoustics, S chand publishing.
5. A. Das, The special theory of relativity, Springer.
6. Resnick Halliday and Walker, Physics, Willey

References Books

1. Sears and Zeemansky, University Physics, XIth edition, Pearson Education
2. H.C. Varma, Concepts of Physics, Bharati Bhavan Publishers
3. P.K. Srivastava, Problems in Physics, Wiley Eastern Ltd.
4. Mott Robert, Pearson Benjamin Cummir, Applied Fluid Mechanics, VI Edition, Pearson Education/Prentice Hall International, New Delhi
5. D.S. Mathur, Properties of Matter, Shamlal Charitable Trust, New Delhi
6. D.S. Mathur, Mechanics Chand and Company, New Delhi-5
7. A. Einstein, Relativity: The special and general theory, Henry holt and company.
8. Charles Kittel, Mechanics Berkeley Physics Course, TMH

Course Outcomes:

After the completion of the course, Students will be able to

- Get the knowledge about forces helps the students in their daily life.
- The velocity and acceleration parameter give the knowledge about how the vehicles Move.
- The information will teach the students about the gravitation.
- Get the knowledge about harmonic motion and different oscillation.
- The information will teach the students about elasticity and their important terms.

List of Experiments:

1. To determine the Standard deviation of given result, of any one of the following, by algebraic formula and histogram.
 - a. Vernier Callipers
 - b. Screw Gauge
 - c. Spherometer
2. To verify laws of parallel and perpendicular axes for moment of inertia.
3. To determine acceleration due to gravity and the radius of gyration to the centre of gravity using compound pendulum.
4. To determine damping coefficient using a bar pendulum.
5. To determine the depression of a beam and hence to determine the Young's modulus of material of beam using Spherometer.
6. To determine the co-efficient/modules of rigidity of a wire using Torsional pendulum by static method.
7. To determine Surface Tension by Jager's method.

Subject Name	L	T	P	Credits
Mathematics – I	3	1	-	4

Course Objectives:

- Basic knowledge of various types of Matrices, properties and its basic theorems.
- Basic knowledge of various types of equations, properties and its basic theorems.
- Revise basic knowledge of Functions properties and its basic theorems.
Revise basic knowledge of Differentiation with application.
- Revise basic knowledge of Indefinite and definite Integrals.

Unit-I

Matrices and Linear System: Rank of a Matrix (By reducing it to Elementary Transformation, Echelon & Normal Forms), Solution of Simultaneous equations by Elementary Transformation Methods, Consistency & Inconsistency of Equations, Eigen Values & Eigen Vectors, Cayley- Hamilton Theorem.

Unit-II

Fundamental Concept of Theory of Equations: Solution of quadratic equations, Symmetric functions of roots, Quadratic polynomial, Polynomial Functions, Relation between the Roots and Coefficients of a Polynomial Equation, Transformations of Equations, Cardan's Method (Depressing the cubic equation).

Unit-III

Elementary Calculus: Introduction of Functions, Concept of real function, types of functions, Composite functions, Continuity of function of one variable and its Properties, Uniform continuity, Chain Rule, Rolle's theorem, Mean value theorems.

Unit-IV

Differential Calculus: Introduction, the beginning of derivatives, Techniques of differentiation, Chain rule, Derivatives of Trigonometric functions, Expansion of functions (Maclaurin, Taylor series and Leibnitz theorem), Maxima and Minima of functions of one variable.

Unit-V

Integral Calculus: Basics of Definite Integral and its properties, Definite Integrals as a Limit of a sum, Application in summation of series, Beta Gamma function.

References

1. Advance Engg. Mathematics, By Ramana, Tata McGraw hill.
2. Advance Engineering Mathematics by D. G. Guffy.
3. Engineering Mathematics by S S Sastri. P.H.I.

Course Outcomes:

- Useful for field of Matlab and Image processing.
- Useful for field of Engineering and Computer Science.

- Student learns about the use of Functions in daily life.
- Optimum solutions and Modeling of the functions.
- Student learns about the use of Differentiation in daily life.
- Optimum solutions and Modeling of the functions.
- Student learns about the use of Indefinite and definite Integrals in daily life.
- Basic fundamentals of used in various fields of Engineering and Computer Science.



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

Course Objectives:

- Give students an in-depth understanding of why computers are essential components in business, education and society.
- Gain in-depth knowledge about the general features of a computer
- Learn various types of memory & I/O management schemes.
- Provides knowledge about fundamentals of organization of a computer
- To study different OS and compare their features.

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 language, 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

Course Outcomes:

- Bridge the fundamental concepts of computers with the present level of knowledge of the students.
- Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet
- Understand binary, hexadecimal and octal number systems and their arithmetic.
- Understand how logic circuits and Boolean algebra forms as the basics of digital computer.
- At the completion of this course students will be introduced to the basics of networking and MS Office.



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

Course Objectives:

- To study basic concept of business and its characteristics.
- To study of basic features of windows operating system.
- Study of MS-Word and its various features.
- Study of MS-Excel and its features
- Study of PowerPoint and its features.

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.

Course Outcomes:

- Different business activities and operations.
- Practical knowledge and use of the Windows operating system.
- Creating word documents for office use.
- Using excel workbooks, functions and formulas.
- Formatting techniques and presentation styles.

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.