

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	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	Credit
Mathematics-I	3	1	0	4

Course Objectives:

- 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.
- To know about the Limits and differentiation of multivariate functions and uses.
- To know about the Double and Triple integrals and uses.

Unit-I

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

Unit-II

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-III

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.

Unit-IV

Limit: Introduction, fundamental theorems on Limits of two variable, Operation on Limits, Functions in the real world Limits, Continuity of two variable.

Partial Derivatives: Definition, Euler's Theorem for Homogeneous functions, Differentiation of implicit functions, Total differential coefficient, Transformations of independent variables, Jacobians, Approximation of errors, Maxima and Minima of functions of two variables.

Unit-V

Advanced Calculus -II: Double integral (Area and Volume), Double integral in Polar Coordinates, Triple integrals (Volume and Surface area), Rectification.

Reference Books:

1. H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
2. G.B. Thomas and R.L. Finney, *Calculus*, Pearson Education, 2007.
3. Tom M. Apostol, *Calculus volume -I*, John Wiley and Sons, Inc., 1967
4. Potter, Goldberg & Edward, *Advanced Engineering Mathematics*, Oxford University Press.

Course Outcomes:

- Student learns about the use of Functions 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.
- Student will learn about the application of Partial differentiation in various fields like EMT and Physics.
- Student will learn about the basic application of Double and Triple integrals in various practical problems (Area, Surface and Volume) and further uses.



Subject Name	L	T	P	Credits
Computer Fundamentals	3	1	-	4

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., Applications of Computers.
Computer Software: Introduction, Software: Definition, Relationship between Software and Hardware, Software Categories, System Software, Application Software.
Number System: Decimal, Binary, Octal, Hexadecimal, Conversions of number systems.

Unit II

Basic computer organization: Block diagram of computer, **Input devices:** classification of input devices, **Output devices:** classification of output devices, Printer, types of printers, **Central Processing Unit (CPU),** Introduction, Elements of CPU: Control Unit (CU), Arithmetic Logical Unit (ALU), Registers, Instruction format Instruction set, Processor Speed, **Memory:** Introduction, memory measuring units, main memory, types of primary memory chips, Secondary storage: Introduction, types of secondary storage devices.

Unit III

SDLC: Software development life cycle, **Algorithm:** Definition, Characteristics, Advantages and disadvantages, **Flowchart:** Definition, Define symbols of flowchart, Advantages and disadvantages. **Programming Logic Buildings:** Introduction, Logic Buildings using flowchart and algorithms.

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 Logic Building concepts of programming.



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

Course Objectives:

- To study of basic features of windows operating system.
- Use of MS-Word for office documentation both in online and offline mode.
- Use of MS-Excel and its features in office environment to access sharable files.
- Use of PowerPoint and its features for expansion of business and group seminars.
- To work on Google office and permissions.

Unit I

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 II

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, Different Page views and page break, Writing in columns, Printing commands, Print preview, Shortcuts of various commands.

Unit III

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 IV

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.

Unit V

Introduction to Google Office- Working with Docs, Sheets, Slides, Forms, Google Doc Creation, editing, sharing and permission, Google Sheet creation, editing, sharing and permission, Google Slides creation, editing, sharing and permission, Google Form creation, editing, sharing and permission.



Reference Books:

1. Windows XP Complete reference, BPB publications.
2. MS Office XP Complete reference, BPB publications.
3. Office management Tata McGraw-Hill Education, 2009

Course Outcomes:

- Use current and emerging word processing technologies to produce organizational documents and presentation materials.
- Perform the current speed and accuracy requirements for typing and 10-key operation in a business environment.
- Compose business correspondence and create graphics and electronic presentations.
- Perform basic office functions.

List of Experiments

1. Study of all the versions of windows.
2. Shortcut keys of various operations.
3. Steps to change desktop background and screen saver.
4. Study of advance features of MS word.
5. Prepare Time-table in Ms-Word.
6. Prepare Application, Letter, Book cover page in 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. Create dropdown list in MS-Excel.
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
Information and Communication Technology-1	-	-	2	0

Course Objectives:-

The course is designed to aim at imparting a basic level programme for students. After completing the course students will be able to use computer technology.

Contents:

Unit-1

Knowing computer:

What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software , Types of software, Concept of Computing, Computer program, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

Unit-2

Operating Computer using GUI Based Operating System:

What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Shortcuts, Basics of O.S Setup; Common utilities.

Unit-3

Understanding Word Processing:

Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

Using Spreadsheet:

Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of SpreadSheet, printing of SpreadSheet.

Unit-4

Google Classroom:

First Login: Go to classroom.google.com , Join a Class with the Class Code , The Stream , Add a Student Post to the Stream , Announcements & Questions , Assignments , Turn In Assignments ,Assignment Details , Unsubmit Assignments , Google Calendar Integration , Google Drive Folders , Google Classroom Navigation.

Course Outcome:-

At the end of course, students will be able to

1. Operate the personal computer system
2. Use the various hardware devices
3. Use the various features of operating system for effective utilization of computer system
4. Use the various applications to prepare the documents
5. Use google classroom.

Activities:

SN	Activity
1.	Identification of various computer hardware
2.	Connection of CPU , monitor , printer.
3.	Booting of operating system
4.	Understand drives in window operating system
5.	Create and manage files and folder tree use accessories utilities of windows os
6.	<ul style="list-style-type: none">● Entering and editing text in a document file.● Apply formatting features on text like bold, italics, underline, font type, colour and size. apply features like bullet, numbering● Create documents, insert images, format tables● Create and manipulate tables
7.	<ul style="list-style-type: none">● Entering and editing data in worksheet

	<ul style="list-style-type: none">• Apply formula and functions in the sheet• Use graphics and auto shapes in excel sheet• Create and manipulate excel charts create pay bills, pay slips, electricity bills using excel• Print sheet using print area
9.	Join A google classroom and submit an assignment.