

## Communication Skills

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### Course Content

#### **SEMESTER: II**

#### Unit – I Section A

**Course Objectives:** - 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.

1: Students will demonstrate competency in communication skills related to production and presentation of messages and documents in multiple formats.

2: Students will demonstrate competency in critical thinking skills related to the analysis, interpretation, and criticism of any message either verbal or non-verbal.

3: Students will demonstrate an understanding of multiple theoretical perspectives and diverse intellectual traditions in formal and informal communication.

4: Students will demonstrate competency in the analysis and practice of ethical communication.

5: Students will demonstrate understanding to the importance of free expression and the responsibilities it entails.

**Unit: I - Grammar & Vocabulary:** Parts of Speech, Determiners, Tenses, Subject-Verb Agreement, Active and Passive Voice, Reported Speech, Punctuations.

Vocabulary: Affixation, Antonyms, Synonyms, one-word substitute, Phrasal Verbs, Idioms, and Jargons.

**Unit: II - Communication Process and its Need:** Meaning of communication, Process of communication, Importance of communication, Types of communication, Seven C's of communication, Barriers in communication and Removal of Barriers.

**Unit: III - Business Communication:** Principles of Effective Business Correspondence: its parts, mechanics, style and forms, Letter of Enquiry, Letter of Placing an Order, Letter of Complaint, Letter of Adjustment, Email Writing.

**Unit: IV - Composition and Translation:** Developing Paragraphs, Précis Writing, Essay Writing, Unseen Passages, Translation.

**Unit: V - EMPLOYABILITY SKILLS:** Job Application, Interview skills, Group Discussion, Teamwork, and Leadership.

### Learning Outcomes:

1: Students will be enriched with good vocabulary and diction.

2: Students will be able to comprehend the process of communication and its components.

3: Students will be able to improve the language skills such as Listening, Speaking, Reading and Writing.

4: Students will be able to enhance phonetic competence, comprehension skills, presentation skills, soft skills etc.

## Topic to be Covered in the Language Laboratory Sessions:

### Self Introduction

1. JAM session
2. Situational Dialogue
3. Role Play
4. Social and Professional Etiquettes
5. Telephone Etiquettes
6. Words often Misused/Misspell or Confused
7. Intonation & Common Errors in Pronunciation
8. Extempore Public Speaking & GD, Debate
9. Idioms and Phrases
10. Conducting Meeting & Conferences
11. Listening (Including Listening Comprehension)
12. Group Discussion
13. Facing Interview with Confidence
14. Movies & Documentary Show based on learning English & motivational with Subtitle.

Teaching various language aspects with the help of Language Lab Software.

### Stages & Levels of the software

1. Tense Buster
  2. Study Skills
  3. Business Communication

### Exercise to be performed by the students:

There will be two oral presentations for the internal assessment of the students; students will have to give the presentation on the given topic by the concerned subject faculty. The grades earmarked will be awarded on the basis of internal assessment of the presentation and overall performance of the student in the class.

### References:-

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 John and Alexander; OUP  
Effective Technical Communication by Rizvi by TMH

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**SEMESTER: II**

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**COURSE OBJECTIVE:**

To familiarize with different branches of mechanics, Static equilibrium of particles, Properties of surfaces and volumes and fundamental concepts of dynamics and lifting machines.

**COURSE CONTENT:**

**Unit I**

**Force and Its application:** Definition, Effect, characteristics of force, Principle of Transmissibility of Forces, Concept of Resultant Force, Law of, Parallelogram of Forces, Triangle of Forces - Polygon of Forces - Determination of Resultant of two or more concurrent forces, Classification of Parallel Forces, Methods of finding resultant Force of parallel forces- analytically & graphically, Position of resultant force of parallel forces, Definition, Classification and characteristics of a force Couple, moment of couple, Moment and application, Varignon's Theorem, Beams and support reaction, Equilibrium of forces, Lami's Theorem Leaver.

**Unit II**

**Center of gravity and centroid:** Difference between Centroid and Center of Gravity (CG), Centroid of standard plane figures and CG of simple solid bodies, Method of finding out Centroid of composite plane laminas and cut sections - Method of finding out CG of Composite solid bodies.

**Unit III**

**Friction:** Concept and types of friction, Limiting Friction, coefficient of friction, angle of friction, angle of repose, Laws of friction ( Static and Kinetic) - Analysis of equilibrium of Bodies resting on Horizontal and inclined Plane, Numerical problems.

**Unit IV**

**Lifting Machines:** Concept of lifting Machines, Definition of Mechanical Advantage, Velocity Ratio and Efficiency of Machines and their relation, Reversibility of Machines and condition for self locking machine, Law of Machines, Maximum mechanical advantage and maximum efficiency of machine, Friction in machine ( In terms of Load and effort), Calculation of M.A., V.R. and efficiency of Simple wheel and axle, Differential wheel and axle, Single purchase crab, Double purchase crab, Simple screw jack, Different System of simple pulley blocks.

**Unit V**

**Work, Power and Energy:** Definition unit and graphical representation of work, Definition and unit of power and types of engine power and efficiency of an engine, Definition and concept of Impulse, Definition, unit and types of energies, Total energy of a body falling under gravity.

**References:**

1. A text book of Applied Mechanics – R.S. Khurmi, S.C. Chand & Co., New Delhi
2. Applied Mechanics – I.B. Prasad, Khanna Publishers, New Delhi
3. Applied Mechanics ( Hindi) – R.S. Jog, Anand Publishers, Gwalior
4. Applied Mechanics ( Hindi) – A.R. Page, Deepak Prakashan, Gwalior

**List of Experiments:-**

1. Verification of laws of parallelogram of forces.
2. Verification of laws of polygon of forces
3. Verification of laws of moments
4. Determination of forces in the members of Jib Crane.
5. Determination of coefficient of friction for surfaces of different materials on horizontal plane
6. Determination of coefficient of friction for surfaces of different materials on an inclined plane
7. Determination of mechanical advantage, velocity ratio and efficiency of the following lifting machines.
  - Simple wheel and axle
  - Differential wheel axle
  - Single purchase crab
  
  - Simple pulley block Simple
  
  - Screw jack.

- Outcomes-**
1. Students would be able to understand the effect of force on various structure,
  2. Students would be able to understand fundamental concept of force and applications of force.
  3. Students will learnt concept of lifting machines and energies.
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**SEMESTER: II**

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**Objective-** The objective of this course is to fulfill the needs of students. It covers Coordinate geometry and Coordinate systems, Vector algebra, Differential calculus, Integral calculus, Differential equation in order to acquire Mathematical knowledge and to Solving a wide range of Practical Problems.

**Co-ordinate Geometry** and Co-ordinate system: Cartesian and Polar, Distance, Division, Area of a triangle.

Locus of a point and its equation. Slope of Straight line angle between two Straight lines. Parallel and perpendicular Straight lines. Standard and general equation of Straight line.

Point of intersection of two Straight lines.

**Vector algebra:** Concept of vector and scalar quantities. Different types of vectors. Addition and subtraction of vectors. Components of a vector, multiplication of two vectors, scalar and vector product with applications (work done, power & reactive power)

**Differential Calculus:** Define constant, variable, function. Value of the function. Concept of limit of a function. Definition and concept of differential coefficient as a limit. Standard results. Derivatives of sum, difference, product, quotient of two functions. Differential coefficient of a function. Differential coefficient of implicit function. Logarithmic differentiation.

**Integral Calculus:** Definition as an inverse process of differentiation. Standard Results (including inverse function). Methods of integration substitution. Integration by parts breaking up into partial fraction, concept of Definite Integral

**Differential Equations:** Concept of differential equation. Solution of first order differential equation (variables separation, homogeneous differential equation, linear differential equation).

References:

1. Coordinate Geometry by S. L. Loni.
2. Differential Calculus by Gorakh Prasad.
3. Integral Calculus by Gorakh Prasad.
4. Engineering Mathematics (M.P. Hindi Granth Akadami) by Dr. S.K. Chouksey & Manoj Singh
5. Higher Engineering Mathematics by B.S. Grewal (Khanna Publication)

**Outcome:** - The curriculum is designed to satisfy the diverse needs of students. Coursework is designed to provide students the opportunity to learn key concept of Applications of mathematics in the field of Engineering. Student will learn about the basic application of mathematics in various practical problems and further uses.

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**SEMESTER:II**

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**Objective of the Course**

This course is designed to demonstrate knowledge of the main computer applications used in business and be able to choose the appropriate applications for a given task.

**UNIT I** Introduction to Computer : History of development of computers , Computer system concepts characteristics ,capabilities and limitations , Generations of computers, Basic components of a computer system – Control Unit, ALU, I/ O Devices, memory – RAM, ROM, EPROM, PROM, Flash Memory and other types of memory. Information concepts & processing : definition of information, data Vs information, introduction to information system, information representation digital media, images, graphics, animation, audio, video etc.

**UNIT II** Data communication & networks : computer networks , networking of computers, introduction to LAN, WAN, MAN, network topologies , basic concepts in computer networks, ISO/OSI Model Introduction to internet technologies : HTML, DHTML, WWW,FTP, TELENET, web browser, net surfing , search engines, email.

**UNIT III** Concepts in Operating System : Elementary concepts in operating system, GUI, introduction to DOS, MS windows, Unix/Linux. Storage Devices : Storage fundamentals – Primary Vs Secondary , Data Storage and Retrieval methods – Sequential, Direct and Index Sequential. Various Storage Devices – Magnetic Tape, Magnetic Disks, Cartridge Tape, Data Drives, Hard Disk Drives, Floppy (Winchester Disk), Disks, Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, DVD, SVCD.

**UNIT IV** Types of Software – System software, Application software, Utility Software, Demoware, Shareware, Freeware, Firmware, Free Software. Microsoft office/Excel :MS word, MS excel , MS Office standard tool bars.

**UNIT V** Programming languages – Machine, Assembly, High Level, 4 GL.  
Introduction to C : C Character Set , Constants, Variables and Key words, Decision and Control Structure : if ,if-elses, forms of if-elses statement, Operators , Types of Loops , Case and Switch Arrays, C Functions – Call by values and Call by reference.

**Learning Outcomes:**

At the end of the course the Students will be able to:

- Describe the uses of computers and why computers are essential components in business and society.
- Work on Microsoft Office applications.
- Understand basic network terminologies.
- Write basic C programs with variables, arithmetic operators, Control statements, array and function.

**Reference Books:**

1 Sinha, P.K.( 2007). *Computer Fundamentals*. New Delhi: BPB Publications.

2.Mukhi, Vijay (2008).*Working with UNIX*. New Delhi: BPB Publications.

3.Rajaraman, V. (2014). *Fundamental of Computer*. New Delhi:Prentice Hall India Pvt. Limited

4. Rajoriya, Sheetanshu (2013). *Computer Fundamentals*. Indore: Kamal Prakashan.
  5. Balaguruswami, E. (2008). *Programming with C*. New Delhi : Tata McGraw Hill.
  6. Simple dose of computers MS Excel 2000 Advance Level by Arun Soni, Publications- Navdeep
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Syllabus of Examination w.e.f. (Session 2016-17)  
Mechanical Engineering Diploma(03YDC)  
**Workshop Technology(MEC070)**

**SEMESTER: II**

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**Course Objective:-**

*Workshop technology is the backbone of the real industrial environment which helps to develop and enhance relevant technical hand skills required by the Engineer working in the various engineering industries and workshops. The students are advised to undergo each skill experience with remembrance, understanding and application with special emphasis on attitude of enquiry to know why and how for the various instructions and practices imparted to them in each shop. The course content should be taught and implemented with the aim to develop different types of skill.*

**Introduction:**

Introduction to workshop, prepare lay out of workshop, general safety rules of workshop, prepare a list of general safety rules to be followed in workshop.

**Fitting Shop**

Introduction to fitting shop, List the Commonly used Metals, Alloys, type of operations performed in fitting shop, fitting tools as marking tools, Clamping devices, striking tools, cutting tools etc. , screw threads, common types of screw threads & the terminology used.

**Carpentry Shop**

Introduction to carpentry shop, type of jobs produced in carpentry shop, commonly used raw material, Know commonly used raw materials & their commercially available size. Carpentry tools: various carpentry tools with their specifications and uses e.g. different saws, chisels, gauges, scales, hammers, tri squares, planners, vice etc. Carpentry Joints:- Introduction of various joints like T, corner, mortise & tenon joints, dovetail, pin, cross half lap joint, etc.

**Black Smithy Shop**

Introduction to black smithy & forging shop, commonly used raw materials: - M.S. Bars of different shapes and size. Smithy Tools: - Know various smithy tools with their specifications e.g. different types of hammers, hot / cold chisel, flatters, tongs, leg vice, swage block, anvils, open hearth and furnaces etc.



## **Welding & Sheet Metal Shop**

Introduction to welding shop, types of welding, tools & equipments used:-specifications & use of various tools and equipments used in Welding shop e.g. A.C. welding transformer, Gas welding set, electrode used, chipping hammer, wire brush, shield, gloves, apron etc.

Sheet working tools and operations.

## **Moulding Shop**

Introduction to shop, types of sands, green sand composition, pattern, types of pattern, allowances, moulding tools and their uses.

### **List of Experiment:**

1. To study the Fitting Shop, tools, equipments, operations and safety measures.
2. To prepare a job in fitting shop with the applications of various fitting operations.
3. To study the Carpentry Shop, tools, equipments, operations and safety measures.
4. To prepare a T-Halving Joint with soft wood by various operations of carpentry.
5. To study of Black Smithy Shop, tools, equipments, operations and safety measures.
6. To prepare Chisel/J hook with the application of hot working in smithy shop.
7. To study the Welding and Sheet Metal shop, tools, equipments, operations and safety. Measures.
8. To prepare a V-Butt joint welding Joint with the help of A. C. Arc Welding.
9. To study the Moulding shop, tools, equipments, operations and safety. Measures.
10. To prepare a Green Sand Mould for a given single piece pattern.

### **References**

1. Workshop technology vol. I by- Hazra & Chaudhary
2. Production technology vol. I by- R.C. Patel & C.G. Gupta
3. Production technology vol. I by- Dalela
4. Work shop technology vol. I by- Raghuwanshi
5. Work shop technology vol. I by - Chapman
6. Workshop Vol. I. - P.N.Vijayvargiya (Hindi medium)

### **Course Outcome:**

1. This course intends to impart basic know-how of various hand tools and their use in different Sectors of manufacturing.
  2. The workshop experiences would help to develop the understanding of the complexity of the industrial job, along with time and skills requirements of the job.
  3. Irrespective of branch, the use of workshop practices in day to day industrial as well domestic life helps to provide solutions to the technical problems.
  4. Select the appropriate tools and materials required for specific technical operation.
  5. Comprehend the safety measures required to be taken while using the tools.
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## **SEMESTER:II**

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**Course objective:** the subject deals with the principles of thermo electricity, Sound , Optics its applications in the field of Engineering modern engineering field.

### **THERMO ELECTRICITY**

Heating effect of electric current: Joule's law, work energy and power in electric circuit, Calculation of electric energy, Thermo electricity, Seeback effect and thermoelectric power, Neutral temperature, temperature of inversion and relation between them, Thermo electric thermometer and thermo couples.

### **SOUND**

Production of sound waves (Longitudinal and transverse waves), Progressive and stationary waves, Basic knowledge of refraction reflection, interference and diffraction, Ultrasonic, Audible range, Production of ultrasonic, properties and uses.

### **OPTICS AND OPTICAL INSTRUMENTS**

Refraction, critical angle and total internal reflection, Refraction through lenses and problems, Power of lenses, Spherical and chromatic aberrations, Simple and compound microscope, telescope and derivation for their magnifying power.

### **ELECTROSTATICS AND ELECTROMAGNETIC INDUCTION**

Coulomb's law, Electric field intensity, potential, Capacity, principle of capacitor types of capacitor, combination of capacitors, Electromagnetic Induction: Faraday's law, Lenz's law, Self and mutual inductance, Transformer and electric motor, Induction coil.

### **MODERN PHYSICS**

Photoelectric effect, threshold frequency, Einstein- equation, Photo electric cells, Radioactivity: decay constant, Half life, mean life, Properties of nucleus, nuclear mass, mass defect, Production of x-rays, properties and its uses, Thermal emission.

### **BASIC ELECTRONICS**

Semiconductors: Introduction, Types of semiconductors, Explanation of conductor, Semiconductor and insulators on the basis of band theory, P-N junction, diode as rectifier.

### **Textbooks/Reference books:**

1. Applied Physics VOL. 1 & 2 - Saxena And Prabhakar
2. Physics - TTTI Publication
3. Physics vol. 1 & 2 - Halliday And Resnick
4. Engineering Physics- Gaur And Gupta
5. Principle Of Physics- Brij Lal & Subramanyan
6. Physics for Technical Education- Ls Zednov

**Experiments:**

<b>SEMESTER-II</b>	
1	Focal length of a convex lens by u-v method
2	Refractive index of prism ( spectrometer)
3	Refractive index of prism ( I-d ) curve
4	Verification of Newton's cooling law
5	Surface tension by Capillary rise method.
6	To find out unknown resistance by meter bridge
7	Coefficient of Thermal conductivity by searl's method.
8	Verification of Newton's cooling law.

**Course outcomes:**

The understanding of student about applications of principles of Physics in the various disciplines of engineering will be enhanced .

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