CM102 ENGLISH AND COMMUNICATION SKILLS – I

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Rationale

The curriculum aims to develop the use of English for three major purposes social interaction, academic achievement and professional use. Listening, speaking, reading, and writing skills can not be thought of as independent skills. They are generally perceived as interdependent where one skill often activates the other skills as well as the paralinguistic skills required for the achievement of effective communication. It is believed that the most effective way to achieve these purposes is through the adoption of a thematic, integrated, content-based approach to teaching and learning.

DETAILED CONTENTS

1. INTRODUCTION (10%)

Theory:

- Definition, Introduction and Process of Communication
- Objectives of Communication
- Essentials of Communication
- Media and Modes of Communication
- Channels of Communication
- Barriers to Communication
- Body language
- Humour in Communication
- Silence in Communication

Note: Teachers are expected to give practical examples, while teaching above topics

2. LISTENING (10%)

Theory: Significance, essentials, barriers and effectiveness of Listening.
Practicals: The following exercises to be conducted in practical sessions:

- Using pre-recorded CDs/DVDs with pre-listening exercise to prepare students about what they are going to hear and comprehension based on the audio
- Note-taking
- Listening for the main ideas
- Assessing listening proficiency

3. SPEAKING (20%)

Theory:
Significance, essentials, barriers and effectiveness of Speaking

- Introduction to phonetics (Dictionary: meaning and pronunciation of words as given in the standard dictionary using symbols of phonetics)

Practicals: The following exercises to be conducted in practical sessions:

- Exercises on pronunciation of common words as given in the standard dictionary using symbols of phonetics
- Greetings for different occasions
- Introducing oneself, others and leave taking(talking about yourself)

- Just a minute (JAM) sessions: Speaking extempore for one minute on given topics
- Paper reading before an audience (reading unseen passages)
- Situational Conversation/role-playing with feedback, preferably through video recording
- Reading aloud of Newspaper headlines and important articles
- Improving pronunciation through tongue twisters

(10%)

4. READING

Theory:

- Techniques of reading: Skimming, Scanning, Intensive and Extensive Reading
- Comprehension, Vocabulary enrichment and grammar exercises based on the following selective readings:

Section-I

- Homecoming – R.N. Tagore
- The Selfish Giant - Oscar Wilde
- The Stick – Justice Surinder Singh

Section-II

- I Have A Dream – Martin Luther King
- My struggle for An Education- Booker T Washington
- Life Sketch of Sir Mokshagundam Visvesvarayya

Section-III

- Ozymandias – P.B. Shelley
- Daffodils – William Wordsworth
- Stopping by Woods on a Snowy Evening – Robert Frost

- Comprehension exercises on unseen passages
- Exercises on interpretation of tables, charts, graphs, signs and pictures etc.

Practicals:

- Paper reading
- Poetry recitation
- Reading newspaper headlines

(15%)

5. WRITING

Theory:

- Significance, essentials and effectiveness of writing
- Paragraph of 100-120 words

Practicals:

- Exercises on spellings
- Group exercises on writing paragraphs on given topics

6. VOCABULARY

(15%)

Theory:

- Vocabulary of commonly used words
- Pair of words (Words commonly confused and misused)

Practicals:

- To look up words in a Dictionary: meaning and pronunciation of words as given in the standard dictionary using symbols of phonetics
- To seek information from an Encyclopedia

7. GRAMMAR **(20%)**

Theory:
- Identification of parts of speech
- Using a word as different parts of speech
- Correction of in-correct sentences
- Tenses
- Voice

Note: Teachers are expected to give practical examples, while teaching above topics

RECOMMENDED BOOKS

1. Text Book of English and Communication Skills Vol – 1, By Alvinder Dhillon and Parmod Kumar Singla; Published by: M/S Abhishek Publications, Chandigarh
2. Spoken English (2nd Edition) by V Sasikumar & PV Dhamija; Published by Tata MC Graw Hills, New Delhi.
3. Spoken English by MC Sreevalsan; Published by M/S Vikas Publishing House Pvt. Ltd; New Delhi.
4. Spoken English –A foundation course (Part-I & Part-II) By Kamlesh Sdanand & Susheela Punitha; Published by Orient BlackSwan, Hyderabad
5. Practical Course in English Pronunciation by J Sethi, Kamlesh Sadanand & DV Jindal; Published by PHI Learning Pvt. Ltd; New Delhi.
6. A Practical Course in Spoken English by JK Gangal; Published by PHI Learning Pvt. Ltd; New Delhi.
7. English Grammar, Composition and Usage by NK Aggarwal and FT Wood; Published by Macmillan Publishers India Ltd; New Delhi.
8. Business Correspondence & Report writing (4th Edition) by RC Sharma and Krishna Mohan; Published by Tata MC Graw Hills, New Delhi.
9. Business Communication by Urmila Rani & SM Rai; Published by Himalaya Publishing House, Mumbai.
10. Business Communication Skills by Varinder Kumar, Bodh Raj & NP Manocha; Published by Kalyani Publisher, New Delhi.
11. Professional Communication by Kavita Tyagi & Padma Misra; Published by PHI Learning Pvt. Ltd; New Delhi.
12. Business Communication and Personality Development by Bsiwajit Das and Ipseeta Satpathy; Published by Excel Books, Delhi
13. Succeeding Through Communication by Subhash Jagota; Published by Excel Books, Delhi
14. Communication Skills for professionals by Nira Konar; Published by PHI Learning Pvt. Ltd; New Delhi.
15. Developing Communication Skills (2nd Edition) by Krishna Mohan & Meera Banerji Published by Macmillan Publishers India Ltd; New Delhi.

BS-112 *APPLIED MATHEMATICS – I

	L	T	P
Pds/week	4	2	-

RATIONALE

The course aims at developing analytical abilities in basics of applied mathematics such as: vector algebra, matrices, elementary numerical analysis, coordinate geometry, differential and integral calculus and solution of first order differential equations. Besides application of above the elements in engineering, the course of study will also provide continuing education base to them.

NOTE: Weightage of each topic for external examination is given in the brackets

DETAILED CONTENTS

1. **ALGEBRA** (15%)
   - (i) Arithmetic Progression (A.P.) – its n^{th} term, sum to n terms. Geometric Progression (G.P.) - its n^{th} term, sum to n terms. And infinite Geometric series. Partial Fractions.
   - (ii) Binomial theorem for positive integral index (without proof), Binomial theorem for any index, Expansions.

2. **TRIGONOMETRY.** (15%)
   - (i) Sum and difference formulas for trigonometric ratios of angles and their application (without proof). Formula from product to sum, difference and vice-versa. Ratio of multiple angles, sub multiple angles (like 2A, 3A, A/2).
   - (ii) In a triangle sine formulas, cosine formulas, Napier's analogy. Solution of triangle.
   - (iii) Simple problems on height and distance.
   - (iv) Plotting of curves y = f(x), f(x), trigonometric functions (Sine, Cosine, Tangent).

3. **COORDINATE GEOMETRY.** (40%)
   - (i) Equation of straight line in various standard forms. Intersection of two straight lines and angle between them. Concurrent lines, perpendicular distance formula.
   - (ii) General equation of a circle and its characteristics. Equation of a circle given center and radius, three point form and diametrical form.
   - (iii) Definition of a conic section, standard equation of a parabola equation of parabola given its focus and Directrix. Given the equation of parabola finding its focus axis, vertex, Directrix and latus section.
   - (iv) Ellipse and hyperbola (standard equation, without derivation) determining the equation of ellipse and hyperbola given the Directrix, focus and eccentricity. Given the equation of the ellipse and hyperbola finding the focii, Directrixes, axes, latus rectum, vertex and eccentricity.

4. **VECTOR ALGEBRA.** (10%)
   - (i) Concept of a vector, Position vector of a point. Addition and subtraction of vectors.
   - (ii) Multiplication of a vector by a scalar product and vector product of two vectors. Application to problems on work done and moment (torque)

5. **DETERMINANT AND MATRIX.** (20%)
   - (i) Definitions Evaluation of a determinant of order two and three. Minor and cofactors. Properties of determinants. Solving simultaneous equations by Cramer's rule.
   - (ii) Concept of a matrix, definitions, Transpose of a matrix, Symmetric and Skew Symmetric matrix, Diagonal matrix, Unit matrix, Addition and Multiplication of matrices, Adjoint and Inverse of a matrix, solving simultaneous equations by matrix methods.

ES – 121 ENGINEERING DRAWING

	L	T	P
Pds/week	2	-	6

RATIONALE

Drawing is the language of engineers & technicians. Reading & interpreting engineering drawing is their day to day responsibility. The course is aimed at in developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings their reading & interpretation. The emphasis while imparting instruction should be to develop conceptual skills in the students.

NOTE:-1. Weightage of each topic for external examination is given in the brackets.

2. First angle projection to be followed.

3. Minimum of 12 sheets to be prepared by each student.

4. BIS SP 46 – 1988 should be followed.

DETAILED CONTENTS

1. INTRODUCTION (5%)

- Drawing instruments & their uses.
- Lines, lettering & dimensioning.
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2. SCALES (10%)

Types of scales, plain scale, diagonal scale, vernier scale.

3. PROJECTION OF POINTS AND LINES (20%)

First angle and Third angle projections

Projection of Points : Introduction, Points situated in Ist, 2nd, 3rd and 4th quadrants. Projection of Lines: Introduction, Line parallel to one or both the planes, Line contained by one or both the planes, line parallel to one of the plane. Line inclined to one plane and parallel to others, Line inclined to both the planes.

4. THEORY OF PROJECTIONS (elaborate theoretical instruction) (15%)

- Introduction to first angle projections
- Drawing 3 views of given objects (at least 2 objects)
- Drawing 6 views of given objects (Non symmetrical objects may be selected for this exercise)
- Identification of surfaces on drawn views & objects drawn.
- Exercises on missing surfaces & views
- Sketching practice of pictorial view from objects

5. SECTION (20 %)

Section planes, true shape of a section

Section of prism

a). Section plane parallel to VP

b). Section plane parallel to HP

Section of pyramids

a). Section plane parallel to base of pyramid

b). Section plane parallel to VP

Section of cylinder

a). Section plane parallel to the base

b). Section plane parallel to the axis

Importance & salient features, methods of representing sections, classification of section, conventions in sectioning.

Drawing of full section, half section, partial or broken out section, offset sections, revolved sections & removed sections. Exercises on sectional views of different objects.

Drawing of different conventions for materials in sections. Conventional breaks for shafts, pipes: Rectangular /square/circular, angle, channel and Rolled sections.

6. **ISOMETRIC VIEWS** (15%)

- Fundamentals of isometric projections (theoretical instructions)
- Isometric views from 2 or 3 given orthographic views

7. **Symbols, Conventions and simple drawing** (10%)

(a) Civil Engineering: Sanitary fitting symbols
(b) Electrical fittings: Symbols for domestic interior installations
(c) Building plan drawing with Electrical and Civil Engineering symbols..

REFERENCES

1. Engg. Drawing A Text Book of Engineering Drawing By Surjit Singh Dhanpat Rai & co.
2. Engineering drawing –planes & solid geometry ND Bhatt, V.M. Panchal Charotar publisher home

BS-213 *APPLIED PHYSICS

	L	T	P
Pds/Week	4	2	2

RATIONALE

Applied physics is a foundation course. Its purpose is to develop proper understanding of physical phenomenon and scientific temper in the students. The course covers basics like Mechanics, Heat, Sound and Light.

DETAILED CONTENTS

1. **Measurement** (20%)

(i) Units and Dimensions

Fundamental and derived units, SI units, dimensions of physical quantities, dimensional formula and dimensional equation, principles of homogeneity of dimensions and applications of homogeneity principle in:

a. Checking the correctness of physical equation.
b. Deriving relations among various physical quantities.
c. Conversion of numerical values of physical quantities from one system of units into other system.

(ii) Errors in measurement accuracy, estimation of percentage error in the result of measurement.

2. **Waves** (20%)

Generation of waves by vibrating particles, progressive wave, equation of waves, energy transfer by particles and waves, superposition of waves and its applications to interference, beats and stationary waves (graphical); sound and light as wave – range of frequencies, wavelengths, velocities and their nature, electromagnetic spectrum.

3. **Sound** (15%)

(i) Acoustics

Reflection, refraction and absorption of sound waves by materials; definition of pitch, loudness, quality and intensity of sound waves, units of intensity (bel and decibel); Echo and reverberation and reverberation time, control of reverberation time. Acoustic insulation (qualitative treatment only of reverberation).

(ii) Ultrasonic

Production of ultrasonic waves by magnetostriction and piezoelectric effect, detection and properties of ultrasonic; applications to drilling, cold welding, cleaning, flaw detection and exploration (sonar).

4. **Light; Geometrical Optics:** (20%)

Defect in image formation, eyepieces construction and principles of preparation of telephoto and zoom lens, principle of optical projectors, optical principles of OHP and slide film projectors.

5. **Laser and its Applications** **(15%)**

Laser principle, types of Lasers; detailed study of the He-Ne and Ruby lasers and their applications. Fluorescent tube; mercury arc light, xenon source, sodium lamp.

6. **Radioactivy and Detection of Radiations** **(10%)**

Natural radioactivity; half-life; decay constant; mean life; radioactive transformation. Principles of nuclear fission and fusion; energy generation. Source of background radiations; health Hazards of radiations. Units of radiation.

LIST OF PRACTICALS

1. Use of Vernier calipers and micrometer for determination of diameter of a wire.
2. Study of resonance in air column and determination of velocity of sound in air.
3. To make a telescope by combination of suitable lenses and determine its magnifying power.
4. To make a compound microscope by suitable combination of lenses and determine its magnifying power.
5. Setting an OHP lenses and mirrors for its best performance.
6. Determination of wavelength of various spectral lines of mercury lamp.
7. Measurement of illumination level of a white surface under: natural daylight, incandescent light and fluorescent light.
8. To compare the intensity of illumination by Bunsen's photometer.
9. Study of diffraction of He-Ne laser beam by markings on a Vernier scale and determination of its wavelength.
10. To measure the first ionization potential of Hg using a diode.

SUGGESTIONS

While teaching the subject, teacher should make maximum use of demonstration to make the subject interesting to the students.

CE-230 GENERAL WORKSHOP PRACTICE - I

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RATIONALE

In order to have a balanced overall development of diploma engineers, it is necessary to integrate theory with practice. General workshop practices are included in the curriculum in order to provide hand on experience about use of different tools and basic manufacturing practices. This course aims at developing general manual and machining skills in the students. Besides above, the development of dignity of labour, precision, safety at work place, team working and development of right attitude are the other objectives.

DETAILED CONTENTS (PRACTICAL EXERCISES)

Note: The students are supposed to come in proper workshop dress prescribed by the institute. Wearing shoes in the workshop(s) is compulsory. Importance of safety and cleanliness, safety measures and upkeep of tools, equipment and environment in each of the following shops should be explained and practiced. The students should prepare sketches of various tools/jobs in their practical Notebook.

The following shops are included in the syllabus:

1. Carpentry Shop-1
2. Painting Shop-1
3. Fitting Shop -I
4. Welding Shop-I
5. Sheet Metal Shop
6. Smithy

Note:

1. Carpentry Shop – I

1.1 Safety precautions in carpentry shop

1.2 Introduction to various types of wood such as Deodar, Kail, Partal, Teak, Mango, Sheesham, etc. (Demonstration and their identification).

1.3 Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed.

Job I Marking, sawing, planning and chiseling & their practice (size should be mentioned)

1.4 Introduction to various types of wooden joints, their relative advantages and uses.

Job II Preparation of half lap joint

Job III Preparation of Mortise and Tenon Joint

2. Painting Shop- I

2.1 Demonstration of various methods of painting wooden items.

2.2 Introduction to various types of paints and safety precaution observed in painting shop

Job I Preparation of wooden surface before painting including primer coating

Job II Painting Practice by brush/spray

3. Fitting Shop

1.1 Introduction to fitting shop tools, common materials used in fitting shop, Identification of materials. Such as Steel, Brass, Copper, Aluminium etc. Identification of various sections of steel such as Flat, Angle, Tee, Channel, Bar Girder, Square, Z-Section, etc.

1.2 Description and demonstration of various types of work benches, holding devices and files. Precautions while filing.

1.3 Description and demonstration of simple operation of hack-sawing, demonstration and description of various types of blades and their specifications, uses and method of fitting the blade.

Job I — Marking of job, use of marking tools and measuring instruments.

Job II — Filing a dimensioned rectangular or square piece of an accuracy of ± 0.5mm

Job III — Filing practice (production of flat surfaces). Checking by straight edge.

1.4 Care and maintenance of measuring tools like calipers, steel rule, try square, vernier calipers, micrometer, height gauge, combination set.

Welding Shop – I

4.1 (a) Introduction to welding and its importance in engineering practice; types of welding; common materials that can be welded, introduction to welding equipment e.g. a.c. welding set, d.c. rectifier, electrode holder, electrodes and their specifications, welding screens and other welding related equipment, accessories and gloves.

(b) Safety precautions during welding

(c) Hazards of welding and its remedies

4.2 Electric arc welding, (a.c. and d.c.) precautions while using electric arc welding. Practice in setting current and voltage for striking proper arc. Earthing of welding machine.

Job I — Practice of striking arc bending and tacking while using electric arc welding set.

Job II — Welding practice on electric arc welding for making uniform and straight weld beads

4.3 Various types of joints and end preparation.

Job III — Preparation of butt joint by electric arc welding.

Job IV — Preparation of corner joint by using electric arc welding.

Smithy Shop

5.1 Demonstration and detailed explanation of tools and equipment used. Forging operations in smithy shop. Safety measures to be observed in the smithy shop.

5.2 Demonstration and description of bending operation, upsetting operation, description and specification of anvils, swage blocks, hammers etc.

5.3 Demonstration and description of tongs, fullers, swages etc.

Job I — To forge a L-hook.

Job II — To prepare a job involving upsetting process

Job III — To forge a chisel

Job IV — To prepare a cube from a M.S. round by forging method

Sheet Metal Shop

Introduction to sheet metal shop, use of hand tools and accessories e.g. different types of hammers, hard and soft maliet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications

0.1 Introduction and demonstration of hand tools used in sheet metal shop.

0.2 Introduction and demonstration of various machines and equipment used in sheet metal shop e.g. shearing machine, bar folder, burring machine, power press, sheet bending machine.

0.3 Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet, galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheets etc.

0.4 Study of various types of rivets, steel screw etc.

Job I Shearing practice on a sheet using hand shears.

a) Practice on making single riveted lap joint/double riveted lap Joint.

b) Practice on making single cover plate chain type, seam joint and riveted butt joint

RECOMMENDED BOOKS

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Chaoudhary; Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III; India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy, KL Narayana et al; MacMillan India Ltd. New Delhi
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd., New Delhi
5. Workshop Technology by B.S: Raghuwansh;, Dhanpat Rai and Co., New Delhi
6. Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi.