

(A) COURSE TITLE & CODE : COMMUNICATION SKILLS –I, G – 101

(E) TEACHING AND EXAMINATION SCHEME:

Course Code	Name of Course	Teaching Scheme					Examination Scheme				Total Marks
							Theory		Practical		
		Pre-requisite	L	T	P	C	ET	PA	ET	PA	
G- 101	Communication Skills –I		3	-	2	5	75	25	-	25	125

(F) DETAILED COURSE CONTENTS

CHAPTER-1.0 COMMUNICATION

- Meaning
- Social Aspect
- Features of Communication.

CHAPTER-2.0 PRINCIPLES OF LANGUAGE GRAMMAR AND USAGE

- The sentence elements: Words, phrases, clauses.
- Phrase structure and clause structure; transformation of sentences.
- Construction correct and effective sentences.
- Punctuation
- Mechanics of writing.

CHAPTER 3.0 PREPARATION FOR WRITING

- Understanding the writing assignment: topic, purpose, audience, scope and constraints.
- Analyzing the context.
- Determining the scope of topic.
- Audience analysis for entry behavior.
- Collecting information for the assignment

CHAPTER-4.0 TIPS FOR CLEAR WRITING

- Introduction
- Choice of words
- Sentence construction
- Paragraph design
- Errors in the use of Verbs.
- Errors in the use of Pronoun.
- Errors in the use of Adjective.

CHAPTER 5.0 COMPOSITION

- Paragraph writing
- Essay writing
- Letter writing
- Comprehension
- Interpreting visuals and illustrating with Visuals like tables, charts and graphs.

CHAPTER-6.0 PUBLIC SPEAKING

- Planning for the Speech
- Design the speech
- Deliver Speech
- Evaluate the speech

CHAPTER-7.0 NON-VERBAL CODES

- Body Language
- Vocalic
- Physical appearance

CHAPTER-8.0 PRESENTATION AND INTERVIEW

- Presentation-Rationale and Use
- Guidelines for the use of visual aids
- Interview: practice and presentation

Ch 6,7 and 8 will be dealt during practical classes

(G) SPECIFICATION TABLE SHOWING DISTRIBUTION OF MARKS AND HOURS

Sl. No.	Chapter No.	Chapter Title	Hours	Marks			
				K	C	A	Total Mark
1.	1.0	COMMUNICATION	4	5	-	-	5
2.	2.0	PRINCIPLES OF LANGUAGE GRAMMAR AND USAGE	8	-	2	8	15
3.	3.0	PREPARATION FOR WRITING	8	-	3	2	15
4.	4.0	TIPS FOR CLEAR WRITING	8	3		2	15
5.	5.0	COMPOSITION	20	1	1	3	25
6.	6.0	PUBLIC SPEAKING		-	-	-	-
7.	7.0	NON-VERBAL CODES		-	-	-	-
8.	8.0	PRESENTATION AND INTERVIEW		-	-	-	-
Total			48	9	10	56	75

Abbreviations: K=Knowledge level, C= Comprehension Level, A=Application level

(A) **COURSE AND TITLE : VALUES AND ETHICS TECHNICAL EDUCATION, G – 102**

(E) **TEACHING AND EXAMINATION SCHEME:**

Sl. No.	Course Code	Name of Course	Teaching Scheme					Examination Scheme				Total Marks
			Pre-requisite	L	T	P	C	Theory		Practical		
								ET	PA	ET	PA	
1.	G- 102	Values and Ethics in Technical Education		-	1	1	2	-	-	25	25	50

(F) **DETAILED COURSE CONTENTS**

CHAPTER-1.0 INTRODUCTION TO VALUES AND ETHICS IN TECHNICAL EDUCATION

- Introduction to values and ethics in technical education.
- Definition of values and ethics
- Relevance of values and ethics in technical education.

CHAPTER-2.0 CORE AND RELATED VALUES

- Health and Harmony with Nature
 - Truth and Wisdom
 - Love and Compassion
 - Creativity
 - Peace and Justice
 - Sustainable development
 - National Unity and Global Solidarity.
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(A) COURSE AND TITLE CODE : ENGINEERING MATHEMATICS 1
G – 103

(E) TEACHING AND EXAMINATION SCHEME:

Sl. No.	Course Code	Name of Course	Teaching Scheme					Examination Scheme				Total Marks
			Pre-requisite	L	T	P	C	Theory		Practical		
								ET	PA	ET	PA	
2.	G-103	Engineering Mathematics – I		4	1	-	5	75	25	-	-	100

(F) DETAILED COURSE CONTENTS

CHAPTER-1.0 ALGEBRA

- Vector and Scalar quantities.
- Type of vectors, geometric representation vector, addition and subtraction of vector, unit vector i, j and k , magnitude and direction of vectors, product of a vector, product of two vectors and their application.
- Arithmetic and Geometric progression (A.P. & G.P.)
- Formula of n th term and A.P.
- Properties and concept of G.P. n th term of G.P.
- Complex quantities
 - Complex number
 - Polar form of complex number
 - Problems, Cube roots of unity, Fourth roots of unity, n th root
 - Permutation and combination, Introductory
- Binomials Theorem
 - Factorials
 - Positive integral values
 - Expansion of $(x+a)^n$
 - Rules
 - Calculation of approximate value.
 - Properties of Binomial Coefficients

CHAPTER-2.0 TRIGONOMETRY

- Trigonometric (T) functions
- Trigonometric function of allied angles
- Trigonometric ratios
- Half angle, double angle, triple angle
- Compound trigonometric functions
- Properties of a Triangle
- Solution of triangle using the properties
- Trigonometric ratios with angles $A+_B$ and $C+_D$

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- Multiple angle of $2A$, $3A$
 - Periodic function and the period of trigonometric function.
 - Expressions for $\sin A/2$, $\cos A/2$, $\tan A/2$ etc.
 - Interpret the graphs of $-a \sin (b \theta + c)$, $a \cos (b \theta + c)$
 - Use multiple and sub-multiple angle formula to simplify trigonometric expression.

CHAPTER-3.0 STATISTICS

- Data frequency distribution, tabulations and representation.
- Continuous and discontinuous variables
- Frequency- relative and commutative relative
- Graphical representation of frequency.
- Bar chart, Histogram and frequency polygon
- Mean, median, mode and relationship.
- Harmonic mean
- Range, Deviation, Mean deviation Std. Deviation
- Probability
- Event and different mathematical formulae
- Probability for independent and dependent events
- Problems based on probability
- Introduction, Lagrange's interpolation method.
- Concept of difference tables.
- Newton's Interpolation methods
- Concepts of extrapolation.

CHAPTER-4.0 MATRICES

- Introduction to determinants
- Matrix- definition, notations
- Element of matrix
- Type of matrix
- Special Matrices
 - Square, diagonal, row, column, scalar Unit, zero or null, upper and lower triangles, Symmetric, skew.
- Addition and subtraction of matrices
- Product of two matrices
- Adjoining of a matrix
- Inverse matrix
- Solution of a system of linear equation using matrix method.

(G) SPECIFICATION TABLE SHOWING DISTRIBUTION OF MARKS AND HOURS

Sl. No.	Chapter No.	Chapter Title	Hours	Marks			
				K	C	A	Total Marks
1.	1.0	ALGEBRA	24	5	8	12	25
2.	2.0	TRIGONOMETRY	22	4	8	10	22
3.	3.0	STATISTICS	16	4	6	8	18
4.	4.0	MATRICES	18	4	4	2	10
<i>Total</i>			80	17	26	32	75

Abbreviations: K=Knowledge level, C= Comprehension Level, A=Application level

(A) COURSE TITLE AND CODE : APPLIED PHYSICS

G – 104

(E) TEACHING AND EXAMINATION SCHEME:

Sl. No.	Course Code	Name of Course	Teaching Scheme				Examination Scheme				Total Marks	
							Theory		Practical			
			Pre-requisite	L	T	P	C	ET	PA	ET		PA
3.	G-104	Applied Physics		3	-	2	5	75	25	25	25	150

(F) DETAILED COURSE CONTENTS

CHAPTER-1.0 S.I. UNITS AND MEASUREMENTS

- Fundamental Units
- Derived Units
- S.I. Units and their importance and notation
- Measurement of length
 - Vernier
 - Micrometer Screw Gauge
 - Spherometer
- Measurement of Mass
 - Physical balance
- Measurement of time
 - Atomic clock

CHAPTER-2.0 PHYSICS OF FLUIDS

- Pressure and Pascal's Law
- Buoyancy and Archimedes Principle
- Atmosphere
 - Pressure of Fluids
 - Torricelli's Barometer
 - Variation with altitude
 - Manometer
- Streamline flow and Turbulent Flow
- Co-efficiency of viscosity and Stoke's Law
- Method for determination of coefficient of viscosity of a liquid
- Surface Tension
 - Molecular force, Cohesive and Adhesive force
 - Surface tension and Surface Energy
 - Angle of contact
 - Relation between surface tension and capillary rise
 - Factors that effect surface tension.

CHAPTER-3.0 SIMPLE HARMONIC MOTION (SHM) AND WAVES

- Periodic Motion
- Period, Amplitude and Frequency
- Velocity and acceleration in SHM
- Examples of simple pendulum, Spring – block system
- Longitudinal and transverse waves
- Displacement relation in a progressive wave
- Speed of a traveling wave
- Principle of superposition of waves
- Interference and Reflection of waves
- Standing waves and modes.

CHAPTER-4.0 KINETIC THEORY OF GASES

- Boyle's Law and Charle's Law
- Perfect gas Law
- Avogadro's hypothesis
- Molecular speeds

CHAPTER-5.0 THERMODYNAMICS

- Thermal Equilibrium
- Zeroth Law of Thermodynamics
- Absolute temperature and ideal gas temperature
- Thermal expansion Heat, Internal energy and work
- First Law of Thermodynamics
- Specific heat
- Relation ($C_p - C_v = R$)
- Thermodynamic processes

CHAPTER-6.0 MEASUREMENT OF HIGH TEMPERATURE

- Gas Thermometer
- Platinum resistance Thermometer
- Setback effect and Thermo-electric Thermometer, Thermo-couple
- Thermopile
- Official Pyrometer
- Comparative study for range and accuracy of above Thermometers

CHAPTER-7.0 RAY OPTICS

- Reflection at a plane surface
- Reflection of light by concave and convex mirrors
- Magnification; Use of mirrors

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- Reflection at a plane surface
 - Refractive index
 - Critical angle and total internal reflection of light
 - Refraction of light at spherical surfaces and lenses
 - Combination of lenses
 - Power of Lens
 - Simple and compound microscope
 - Refraction through prism
 - Refraction in a prism
 - Dispersion by a prism
 - Determination of refractive index of the material of a prism
 - Electromagnetic spectrum and its visible range.

CHAPTER-8.0 MAGNETISM

- Bar Magnet
- Magnetic lines of force
- Magnetism and Gauss's Law
- The Earth Magnetism
- Magnetisation and Magnetic Intensity
- Magnetic properties of materials
- Permanent Magnets and Electromagnets.

CHAPTER-9.0 ELECTROMAGNETISM

- Experiment of Faraday and Henry
- Faraday's Laws of induction
- *Len's Law*
- Magnetic Induction of a solenoid
 - Effect of placing soft iron core in solenoid
 - Magnetic permeability
 - Relation between magnetic field developed and strength of electric current in a solenoid.

CHAPTER-10.0 MODERN PHYSICS

- Radio Activity
 - Radioactive substance
 - Properties of alpha, Beta and x-rays
 - Radio activity – a nuclear phenomena
 - Simple disintegration
 - Half life and decay constant and their relation
- Photo-electric effect
 - Photo-electron, photo electric effect
 - Photo cell
 - Plank Quantum Law
 - Einstein photo electric equation
 - Threshold Frequency
- X-rays

- Discovery of X-rays, production of X-rays
- Use of X-rays in testing (metal casting, welding joints etc.)
- Laser
 - Description of Maser and Laser
 - Outline of method of production of laser
 - Use of laser in engineering cutting, making holes in ceramics and super hard metals etc.

(G) SPECIFICATION TABLE SHOWING DISTRIBUTION OF MARKS AND HOURS

Sl. No.	Chapter No.	Chapter Title	Hours	Marks			
				K	C	A	Total Marks
1.	1.0	S.I. UNITS AND MEASUREMENTS	07	5	3	2	10
2.	2.0	PHYSICS OF FLUIDS	05	2	2	2	06
3.	3.0	SIMPLE HARMONIC MOTION (SHM) AND WAVES	05	2	2	2	06
4.	4.0	KINETIC THEORY OF GASES	05	2	2	2	06
5.	5.0	THERMODYNAMICS	04	4	2	1	07
6.	6.0	MEASUREMENT OF HIGH TEMPERATURE	04	4	2	1	07
7.	7.0	RAY OPTICS	04	4	2	1	07
8.	8.0	MAGNETISM	04	4	2	2	08
9.	9.0	ELECTROMAGNETISM	04	4	2	2	08
10.	10.0	MODERN PHYSICS	06	5	2	3	10
Total			48	36	21	18	75

Abbreviations: K=Knowledge level, C= Comprehension Level, A=Application level

- (A) **COURSE TITLE AND CODE** : **APPLIED CHEMISTRY**
G – 105
- (B) **LEVEL** : **ONE**
- (C) **BRANCH/DISCIPLINE** : **COMPUTER ENGINEERING**
- (D) **RATIONALE** :

The basic aim of applied chemistry is to develop right type of attitudes in the students. It develops in the students the habits of scientific enquiry, ability to investigate the cause and effect relationships, ability to predict the results under given conditions of activities and given convincing reasons for his prediction. A student of chemistry is able to make generalization.

The knowledge of Applied Chemistry is essential for a technician and engineers because chemistry is concerned with the changes in the structures and properties of matter and all engineering activities and processes are involved to bring out these changes.

(E) **TEACHING AND EXAMINATION SCHEME:**

Course Code	Name of Course	Teaching Scheme					Examination Scheme				Total Marks
		Pre-requisite	L	T	P	C	Theory		Practical		
							ET	PA	ET	PA	
G-105	Applied Chemistry		3	-	2	5	75	25	25	25	150

(F) **DETAILED COURSE CONTENTS**

CHAPTER-1.0 WATER TREATMENT

- Hard Water and Soft Water Treatment
- Types of impurities in Water
- Scale and Sludge formation and its prevention.
- Treatment of water for domestic and industrial purposes
Sedimentation, Coagulation, Filtration, Sterilization
Disinfections of water by boiling, chlorination and other methods,

CHAPTER-2.0 IONISATION AND ELECTRO-CHEMISTRY

- *Ionisation and degree of ionisation, factors affecting degree of ionisation*
- pH and its importance, Buffer solution and its applications, Metallic conductors and electrolytes.
- Types of electrolytes and their industrial applications, Electrolytic conductance.

CHAPTER-3.0 METALLURGICAL PROCESSES, METALS AND ALLOYS

- Occurrence of Minerals and Ores
- General principles of Metallurgy
 - Ore dressing
 - Roasting
 - Smelting
 - Bessemerisation
- Different kinds of furnaces
- Fluxes
- Purification
- Extraction of metals

CHAPTER-4.0 FUELS AND COMBUSTION

- Classification of Fuels
- Calorific value
- Properties and application of different fuels.
 - Coal
 - Petroleum
 - Oil Gas
 - Natural Gases

CHAPTER-5.0 CORROSION OF METALS AND ITS PREVENTION

- Oxidation – Reduction process
- Corrosion – Introduction
- Electrochemical series and its significance
- Types of corrosion
- Factors affecting corrosion
- Protection against corrosion

CHAPTER-6.0 REFRACTORIES AND CERAMICS

- Definition of refractories
- Properties of refractories
 - Refractoriness
 - Strength
 - Thermal Expansion
 - Thermal Conductivity
 - Porosity
 - Thermal Shock Resistance
- Classification of Refractories
- Portland Cement
- Properties of Portland Cement
- Types of Portland Cement
- Mortar and Concretes

CHAPTER-7.0 LUBRICATION AND LUBRICANTS

- Introduction and definition of lubricants and lubrication
- Functions of lubricants
- Types of Lubrication
 - Fluid Film Lubrication
 - Boundary Lubrication
- Classification of Lubricant
 - Solid Lubricants
 - Semi-solid Lubricants
 - Liquid Lubricants
 - Synthetic Oils
- Mechanism of Lubrication
- Properties of Lubricants

CHAPTER-8.0 ADHESIVES, PAINTS AND VARNISHES

- Definition, characteristics and Examples of Adhesives
- Classification of adhesives and their uses
- Purpose of characteristics and ingredients of Oil-paint
- Varnish and its types
- Difference between paint and varnishes

CHAPTER-9.0 POLYMERS, PLASTICS AND ELASTOMERS

- Outline of Polymer and Polymerisation
- Classification of Polymers with suitable examples
- Preparation, Properties and uses of the Polyethylene, PVC, Nylon – 6:6, Polystyrene, Bakelite
- Vulcanisation of rubber and its applications
- Application of elastomers in industry

CHAPTER-10.0 ELEMENTARY ORGANIC CHEMISTRY

- Differentiation of inorganic and organic Chemistry
- Homologous series
- Nomenclature of different functional groups with their general structural formulae
- Preparation and properties of methane, Ethane, Ethylene and Acetylene
- Aromatic Hydrocarbon – Nomenclature, Structural Formulae and Properties of Benzene

CHAPTER-11.0 ELEMENTARY PHYSICAL CHEMISTRY

- Catalysis – Types, Characteristics, Theory of Catalysis, Applications of Catalysis in industry

- Thermo Chemistry – Endo and Exothermic reaction, Heat of formation, Heat of neutralisation, Heat of reaction, Heat of combustion, Hess law
- Radioactivity – Introduction Characteristics of alpha, beta and gamma rays, Half life period, Artificial Fission, Atomic Fusion, Application of Radioactivity.

(G) SPECIFICATION TABLE SHOWING DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Title	Hours	Marks			
			K	C	A	Total Mark
1.0	WATER TREATMENT	04	2	2	2	06
2.0	IONISATION AND ELECTRO CHEMISTRY	03	1	2	2	05
3.0	METALLURGICAL PROCESS, METALS AND ALLOYS	04	3	2	2	07
4.0	FUELS AND COMBUSTION	04	2	1	2	05
5.0	CORROSION OF METALS AND ITS PREVENTION	05	3	2	1	06
6.0	REFRACTORIES AND CERAMICS	02	1	2	2	05
7.0	LUBRICATION AND LUBRICANTS	03	2	2	2	06
8.0	ADHESIVES, PAINTS AND VARNISHES	04	2	2	2	06
9.0	POLYMERS, PLASTICS & ELASTOMERS	04	3	2	2	07
10.0	ELEMENTARY ORGANIC CHEMISTRY	08	5	5	2	12
11.0	ELEMENTARY PHYSICAL CHEMISTRY	7	5	3	2	10
	Total	48	29	25	21	75

Abbreviations: K=Knowledge level, C= Comprehension Level, A=Application level

(A) COURSE TITLE AND CODE : COMPUTER FUNDAMENTALS & APPLICATIONS, G - 202

(E) TEACHING AND EXAMINATION SCHEME:

Code	Name of Course	Teaching Scheme					Examination Scheme				Total Marks
		Pre-req.	L	T	P	C	Theory		Practical		
							<i>ETH</i>	PA	ET	PA	
CE-205	Computer Fundamental & Applications	-	2	-	4	6	75	25	25	-	150

(F) DETAILED COURSE CONTENTS

CHAPTER-1.0 INTRODUCTION TO COMPUTERS

- Generations of Computer.
 - First, Second, Third and Fourth generation
- Classification & Applications Of Computers.
 - Micro, Mini, Mainframes and Super- Computers
 - Applications of computers
- Structure & working of Micro Computers
 - Central Processing Unit
 - Memory Unit
 - Input & Output devices.
- Evolution of Micro-Computers
 - Comparative study w.r.t. Micro-processor, clock speed, data bus, Register size, storage capacity, peripheral interface of PC to Pentium -IV computer systems.

CHAPTER – 2.0 DATA REPRESENTATION & NUMBER SYSTEMS

- Data Representations.
 - Bit, Byte, Nibble, Word, Double word
 - Codes: ASCII, Binary Coded Decimal (BCD) EBCDIC, GREY and EXCESS 3 code.
- Number Systems.
 - Types of number systems- Binary, Octal, Decimal, Hexadecimal
- Conversions Of Number Systems And Its Operations
 - Binary addition, subtraction
 - BCD addition, subtraction.
 - 1's complement and 2's complement methods of subtraction.
 - Floating point arithmetic.

CHAPTER-3.0 COMPUTER LANGUAGES

- Classification and characteristics of languages.
 - Machine language.
 - Assembly language
 - High level language
- Hardware, Software and Firmware
 - Computer Hardware
 - Classification of Software:

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- System software: O.S. Loader, Linker, Interpreter, Compiler and Assembler
 - Application Software

CHAPTER- 4.0 INTRODUCTION TO OPERATING SYSTEMS

- Micro-Soft Disk Operating System (MS-DOS)
 - System files: BIOS, COMMAND.COM, CONFIG.SYS, Autoexec.bat file
- MS-DOS Commands.
 - Internal Commands- dir, cd, md, rd, del, ren, date, time, vol. And copy
 - External commands – attrib, format, edit, find, diskcopy, backup & Restore
- Windows Operating System.
 - Concept of Windows-Arranging, Moving, Resizing, Opening, and Closing of windows
 - Folder/ File Management-Search, copy, delete and rename files and folders Restore
 - Windows Accessories: Notepad, Word Pad, Paint

CHAPTER – 5.0 COMPUTER APPLICATIONS SOFTWARE

- Word processing software
 - MS-WORD
- Data analysis software
 - MS-EXCEL Introduction to electronic spreadsheet
- Presentations software
 - MS-POWER POINT

CHAPTER - 6.0 INTERNET TECHNOLOGY

- Introduction To Internet.
- Different Services Of Internet.
 - www
 - Email
 - Chat (textual /voice)
 - Bulletin Boards
 - Video conferencing
 - FTP(uploading and downloading files)
- Web-Site Access And Information Search.
 - Browsers and search engines.
- Internet Connectivity.
 - Internet Service Provider (ISP)
 - Internet accounts : Shell account, TCP/IP ISDN and Leased Line account and its features
- Hardware Required.
 - MODEM and Terminal Adapters.

CHAPTER – 7.0 LATEST TRENDS IN INFORMATION TECHNOLOGY

Emerging trends in the area of software, hardware and overall IT area in general

(G) SPECIFICATION TABLE SHOWING DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Name of Chapter	Hours	Marks			
			K	C	A	Total Marks
1.0	Introduction to Computers	3	2	6	4	12
2.0	Data Representation & Number System	2	3	4	2	9
3.0	Computer Languages	2	4	4	2	10
4.0	Introduction to Operating Systems	9	4	4	4	12
5.0	Computer Application Software	6	2	3	3	8
6.0	Internet Technology	5	3	4	3	10
7.0	Latest Trends in Information Technology	5	2	6	6	14
	Total	32	20	31	24	75

Abbreviations: K=Knowledge level, C= Comprehension Level, A=Application level