1.0 SUBJECT TITLE : COMMUNICATION SKILLS.

2.0 SUBJECT CODE : 101

3.0 PAPER CODE : 6031

4.0 SEMESTER : ONE

5.0 RATIONALE :

The wide range of communicative and functional need of English in the evolving global and technical environment has more than ever imposed a demand of acquiring proficiency in communication skills in our technicians and diploma passouts. This is the one of the most important competencies needed by the industry from the polytechnic passouts. By studying this course, the students will be able to appreciate the basics of communication process, business communication, the grammar, its usage in reading, writing and speaking which need to be honed throughout their stay in the polytechnic and later in his/her career.

Besides being a professional language, it also acts as a window to technical and scientific knowledge. Acquiring proficiency in English is absolutely essential for effective communication while serving in job or in communication with different personnel in the offices, industries private sector etc. Therefore, acquiring proficiency in listening, speaking, reading and writing English is an integral part of professional and technical competence.

THEORY COMPONENT							PRACTICAL COMPONENT					
LECTURES HRS. PER WEEK	CONTINUOUS EVALUATION			END OF THE TERM / SEMESTER EVALUATION		TOTAL MARKS, (THEORY)	PRA-CTI-CAL HRS. PER WEEK	CONTI-NUOUS EVA-LUA-TION	END OF THE TERM/ SEMESTER EVALUATION		TOTAL MARKS (PRAC.)	**TOTAL MARKS (THE.+PRAC.)**
	TERM WORK	PROG-RESSIVE TESTS		THEORY PAPER				LAB. WORK	PRACT./ ORAL EXAM. (VIVA -VOCE)			
		I	II	MARKS	DUR-ATION (Hrs.)				MARKS	DURA-TION (Hrs.)		
06	30	10	10	100	03	150	_	_	_	_	_	150

6.0 TEACHING AND EXAMINATION SCHEME :

7.0 ENABLING OBJECTIVES :

The students, after completing the course will be able to –

7.1 explain the need of effective communication in all walks of life.
7.2 use grammar and vocabulary appropriately for correct English usage.
7.3 use general purpose words of English to express himself in speaking, reasonably clearly and correctly on routine matters.
7.4. write different types of letters, applications, complaint,s etc
7.5. write a composition on the given topic in~ 150 words.
7.5 summarize the given text on the specified points in writing.
7.6 translate the given paragraph/text.
7.7 answer the questions after comprehending a passage.
7.6 communicate effectively in a professional environment though speaking and writing to achieve given objective.

8.0 DETAILED COURSE CONTENTS :

CHAPTER – 1.0 COMMUNICATION PROCESS AND ITS NEEDS :

1.1 (i) How to make communication effective
(ii) Barriers in communication, Removal of barriers

1.2 Grammar and vocabulary for correct English usage.
1.2.1. Determiners, Prepositions, Auxiliary verbs and subject-verb agreement.
1.2.2. Rewrite as directed (change voice, correct form of verbs/tenses)
1.2.3. Vocabulary – One word substitution, words often misused and wrongly spelt.

CHAPTER – 2.0 PASSAGES OF COMPREHENSION :

2.1 Prescribed passages (six from existing syllabus) :

- Language of Science
- Desalination or Desalting Process
- Safety Practices
- Non-conventional Sources of Energy
- Our Environment
- Entrepreneurship

2.2 Writing summary, moral and characterization of any one story from the book prescribed.

CHAPTER – 3.0 BUSINESS COMMUNICATION :

(one question with internal choice) ;

3.1 Principles of effective business correspondence - its parts, mechanics, styles and forms
3.2 Application for job, bio-data and C.V..
3.3 Letter of Enquiry
3.4 Placing order
3.5 Complaint

.

CHAPTER – 4.0 COMPOSITION & TRANSLATION ;

4.1 Writing paragraphs of 150 words on topics of general interest i.e. pollution, ragging in college, importance of computers, importance of communication skill, importance of science and technology etc.
4.2 Translation (Hindi to English and vice-versa).

CHAPTER - 5 UNSEEN PASSAGES & PRECIS WRITING :

5.1 Answer the questions based on the passage**.**
5.2 Give suitable title
OR
Writing Precis

9.0 SUGGESTED SPECIFICATION TABLE (THEORY) :

CH. NO.	CHAPTER NAME	HOURS/PERIODS	TENTATIVE DISTRIBUTION OF MARKS			
			R	U	A	TOTAL MARKS
1.0	Communication Process and its Needs	15	8	8	4	20
2.0	Passages of Comprehension	20	10	7	5	22
3.0	Business Communication	20	10	7	5	22
4.0	Composition & Translation	18	10	6	2	18
5.0	Unseen passages & Precis writing	17	6	10	2	18
		90				100

Abbreviations: **R**=Remembrance level, **U** = Understanding Level, **A**=Application level

10.0 SUGGESTED IMPLEMENTATION STRATEGIES :

The students will be able to develop the communication skills if this course is treated in such a way that enough of practice and feedback to the different types of oral and written communication exercises are provided. For this, lot of practice is given to the students through extempore speeches, debates, seminars, group discussions etc. through variety of assignment/exercises etc Moreover, the communication skills could also be developed through the technical courses through report writing, problem solving discussions, role-plays etc. during teaching – learning of the technical content.

11.0 SUGGESTED LIST OF EXPERIENCES/TUTORIALS :

11.1 Using a dictionary
11.2 Use of newspaper/news magazines articles
11.3 Designing the message.
11.4 Writing topic sentences.
11.5 Writing paragraphs.
- Writing function paragraph.

11.6 Oral presentation about technical products for five minutes.
11.7 Seminar Presentation/Report writing and presentation on identified topics from science and technical subjects for short duration.
11.8 Group discussion on science and technical topics.
11.9 Organisation of mock interviews.
11.10 Organisation of debates.
11.11 Extempore speech for three minutes on a topic.
11.12 Observation of a process and reproduction orally in own words for three to five minutes.
11.13 Arrangement of video recording of presentations for self-feedback.

12.0 SUGGESTED LEARNING RESOURCES :

12.1 Textbooks/Reference books (as mentioned below).
12.2 TV programmes.
12.3 Newspaper clippings.
12.4 Periodicals like, news magazines, journals etc.
12.5 OHP transparencies

12.1 REFERENCE BOOKS :

S.No.	TITLE	AUTHOR, PUBLISHER, EDITION AND YEAR OF PUBLICATION	ISBN NUMBER
1.	English Conversation Practice	Grant Taylor	
2.	Practical English Grammar	Thomson & Martinet	

3.	Communication Skills for Technical Students Book – I, Book – IIby	M/S Somaiya Publication, Bombay	
4.	Living English Structure	S. Allen	
5.	English Grammar, Usage, and Composition	– Tickoo Subramanian, S. Chand & Co. Standard Allen Longman.	
6.	Essentials of Business Communication	Dr. Rajendra Pal & J.S. Korlahalli , S.Chand & Sons, New Delhi.	
7.	Effective Business Communication-	M.V. Rodriques, Concept Pub. Co., New Delhi.	
8.	Communication for Business	Shirely Taylor, Longman, England.	
9.	Communication for Engineers and Professors	by P. Prasad, S.K.Kataria and sons publications, New Delhi	
10.	Technical English Book-II,	Somaya Publications, New Delhi	
11.	Practical English Grammar	Wren and Martin, 1992	
12.	Collins Cobuild English Grammar	John Sinclair (ed.), William Collins & Sons Cp., London 1990	
13.	Effective English Communication	Krishna & Mohan, Tata McGraw Hill, New Delhi 2000	
14.	University Grammar of English	Randolf, Quirk & Sidney Greenbaum, 1993	
15.	Communication Skills for Technical Students – Book I	Tiwari, N.P. et al., Somaiya Publications, 1995	
16.	A Communicative Grammar of English	Tiwari, N.P. et al., Somaiya Publications, 1989	

12.2 SUGGESTED READINGS :

S.No.	SUGGESTED READINGS
1 2 3	**To enhance the reading skills and generate interest :** • A Brief History of Time: - Stephan Hawking, Bentham Books, Great Britain • Cosmos: - Carl Sagan, Bentham Books, Great Britain. • Ignited Minds: - A.P.J. Abdul Kalam, Penguin Books. • India 2020: - A.P.J. Abdul Kalam, and Y.S. Rajan Penguin Books. • Beyond the Last Blue Mountain: - J.R.D. Tata, Penguin Books • Life and Times: - Albert Einstein, Bentham Books. • Power of Oration: - Abraham Lincoln. **Faster reading for deriving pleasure :** • Interpreter of Maladies: - Jhumpa Lahiri.,Harper & Collins. • Short stories by R.K.Narayan,Tagore,Tolstoy,Mulkraj Anand,O.Henry. **For Vocabulary Building :** • Word Power made Easy: - Norman Lewis, Bloomsbury • Reading, Spelling, Vocabulary, Pronunciation, Book 1,2 &3: - Norman Lewis. • The Joy of Vocabulary: - Levine, Levine & Levine. • Roget's Thesaurus of Synonyms and Antonyms. • Cambridge English Pronouncing Dictionary: - Danial Jones . • Audio- Visual learning resources and multimedia learning material for pronunciation improvement and listening skills.

13.0 TENTATIVE LIST OF LABORATORY EQUIPMENT ;

1. T.V.
2. Speakers with head phones
3. Tape Recorder

14.0 LIST OF EXPERTS AND TEACHERS WHO CONTRIBUTED FOR THIS CURRICULUM ;

1.	Shri M.K.Jain	- Lecturer -	S.V.Polytechnic, Indore
2.	Shri K.K.Sharma-	- Lecturer -	Govt. Polytechnic,Balaghat
3.	Smt. Vijya Shinde	- Lecturer -	Govt. women Polytechnic, Indore
4.	Shri D.Gogate	- Lecturer -	S.V.Polytechnic, Indore
5.	Shri Pravin Ingle	- Lecturer -	Govt. Women Polytechnic, Indore
6.	Dr. Sarla Verma	- Lecturer-	SGSITS, Indore

7.	Shri Choudhary	- Lecturer - Govt. Polytechnic, Pachore
8.	Shri M.R.Jhalavad	- HRD management expert Indore
9.	Shri R.K. Tripathi	-Lecturer- S.V.Polytechnic Bhopal.
10.	Smt.Rekha Verma	-Lecturer - Govt.Women's Polytechnic, Jabalpur.

1.0 SUBJECT TITLE : PHYSICS

2.0 SUBJECT CODE : 102

3.0 PAPER CODE : 6031

4.0 SEMESTER : ONE

5.0 RATIONALE :

Physics forms the foundation of engineering. The subject of physics has its importance amongst all the physical sciences, therefore, it is to be taught exclusively to the students of diploma in engineering. Physics forms a foundation for all technical courses. The study of basic principles of Physics will help the students in understanding engineering concepts and applications.

6.0 TEACHING AND EXAMINATION SCHEME ;

THEORY COMPONENT							**PRACTICAL COMPONENT**					
LECTURES HRS. PER WEEK	CONTINUOUS EVALUATION			END OF THE TERM / SEMESTER EVALUATION		TOTAL MARKS (THEORY)	PRA-CTI-CAL HRS. PER WEEK	CONTI-NUOUS EVA-LUA-TION	END OF THE TERM/ SEMESTER EVALUATION		TOTAL MARKS (PRAC.)	**TOTAL MARKS (THE.+PRAC.)**
	TERM WORK	PROG-RESSIVE TESTS		THEORY PAPER				LAB. WORK	PRACT./ ORAL EXAM. (VIVA -VOCE)			
		I	II	MARKS	DUR-ATION (Hrs.)				MARKS	DURA-TION (Hrs.)		
06	15	10	10	100	03	135	04	15	50	03	65	200

7.0 ENABLING OBJECTIVES :

The students after completing the course will be able to –

7.1 use vernier calipers, screw gauge ,spherometer etc for measurement.
7.2 solve problems related to motion and its types.
7.3 explain molecular phenomenon of solids, liquids and gases such as Brownian motion, Kinetic , Potential energy of molecules.etc
7.4 solve problems on properties of matter like elasticity, surface tension, viscosity etc.
7.5 explain concepts related to heat and temperature such as heat capacity, specific heat, latent heat etc.
7.6 calculate electric energy.
7.7 describe basic concepts of thermo-chemistry like Seeback effect, thermo electric thermometer, thermo couple etc.
7.8 describe different phenomena of sound.
7.9 explain different phenomena of optics such as refraction, total internal reflection etc.
7.10 use simple and compound microscope.
7.11 describe basic concepts/principles of electrostatics and electromagnetic induction.
7.12 explain basic concepts of modern physics and basic electronics.

8.0 DETAILED COURSE CONTENTS :

CHAPTER – 1.0 UNITS & MEASUREMENT

1.1 Fundamental and derived units
1.2 Scalar and vector, Basic requirements to represent vector
1.3 Symbols, abbreviation, and proculation
1.4 Linear measurement by vernier calipers, screw gauge and spherometer
1.5 Angular measurement by angular vernier.

CHAPTER – 2.0 MOTION

2.1 Motion and its type
2.2 Linear motion (laws and equation)
2.3 Circular motion
  2.3.1 Angular velocity and relation with linear velocity
  2.3.2 Centripetal acceleration, Centripetal and Centrifugal forces
2.4 Rotatory motion
  2.4.1 Axis of rotation
  2.4.2 Moment of Inertia, Radius of gyration.
  2.4.3 Kinetic energy of rotation
2.5 Numerical problems and solution on the topic

CHAPTER – 3.0 MOLECULAR PHENOMENON OF SOLIDS, LIQUIDS AND GASES

3.1 Postulates of Molecular Kinetic Theory Of Structure of matter
3.2 Brownian motion
3.3 Kinetic and Potential energy of molecules
3.4 Kinetic theory of gases
- 3.41 Postulates
- 3.42 Calculation of pressure by Kinetic theory
- 3.43 Prove of different gases law by Kinetic theory.

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CHAPTER – 4.0 PROPERTIES OF MATTER

4.1 Elasticity: Meaning, definition, stress, stain, Hook's law and elastic limit
4.2 Surface Tension : Meaning, definition, molecular forces, cohesive and adhesive forces, surface energy, capillary rise method.
4.3 Viscosity : Meaning, definition, stream line and turbulent flow, critical velocity, Stoke's law.
4.4 Numerical problems and solution on the topic.

CHAPTER – 5.0 : HEAT

5.1 Heat and temperature, concept of heat as molecular motion
5.2 Transmission of heat, steady state and variable state.
5.3 Concept of heat capacity, specific heat and latent heat.
- 5.3.1 Calorimeter and its uses
- 5.3.2 Thermodynamics
- 5.3.3 Relation between heat and work
- 5.3.4 Mechanical equivalent of heat
- 5.5.3 First law of thermodynamics and its application
- 5.5.4 Second law of thermodynamics and its application
- 5.5.5 Carnot cycle
- 5.5.6 Numerical problems and solution on the topic.

6.0 HEATING EFFECT OF CURRENT AND THERMO-ELECTRICITY

6.1 Heating effect of electric current: Joule's law, work energy and power in electric circuit, calculation of electric energy.
6.2 Thermo electricity
- 6.2.1 Seeback effect and thermoelectric power.
- 6.2.2 Neutral temperature, temperature of inversion and relation between them
- 6.2.3 Thermo electric thermometer and thermocouples.

6.3 Numerical problems and solution on the topic

7.0 SOUND

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

8.0 OPTICS AND OPTICAL INSTRUMENTS

8.1. Refraction, critical angle and total internal reflection, refraction through lenses and problems
8.2 Power of lenses
8.3 Spherical and chromatic aberrations
8.4 Simple and compound microscope, telescope and derivation for their magnifying power.
8.5 Numerical problems and solution on the topic.

9.0 ELECTROSTATICS AND ELECTROMAGNETIC INDUCTION

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

10.0 MODERN PHYSICS AND BASIC ELECTRONICS

10.1 Photoelectric effect, threshold frequency, Einstein- equation, Photo electric cells
10.2 Radioactivity : decay constant, Half life, mean life
10.3 Properties of nucleus, nuclear mass, mass defect
10.4 Production of X-rays, properties and its uses
10.5 Thermal emission, semiconductors,
10.6 Types of semiconductors.
10.7 Explanation of conductor, semiconductor and insulators on the basis of band theory.
10.8 P-N junction, diode as rectifier.

9.0 SUGGESTED SPECIFICATION TABLE (THEORY) :

CH. NO.	CHAPTER TITLE	HOURS	MARKS			
			R	U	A	TOTAL MARKS
1.0	Units & Measurement	10	03	03	02	08
2.0	Motion	08	04	03	01	08
3.0	Molecular Phenomenon Of Solids, Liquids And Gases	10	05	05	02	12
4.0	Properties Of Matter	10	06	04	02	12
5.0	Heat	8	03	03	02	08
6.0	Heating effect of current and thermoelectricity	10	04	04	02	10
7.0	Sound	06	03	03	02	08
8.0	Optics And Optical Instruments	06	04	04	02	10
9.0	Electrostatics And Electromagnetic Induction	10	06	04	02	12
10.0	Modern Physics and Basic Electronics	12	06	04	02	12
		90				100

Abbreviations: **R** = Remembrance level,U=Understanding Level,
A = Application level.

10.0 SUGGESTED IMPLEMENTATION STRATEGIES :

- Class room demonstration of basic concepts should be compulsorily done by the teachers.
- Visits to industries for reinforcing concepts, demonstration of particular equipment/process.
- Mini Projects should be given to the students.

11.0 SUGGESTED LIST OF EXPERIENCES/TUTORIALS (PRACTICAL HOURS 60)

(1) Determination of Refractive index of prism (I-d) curve.
(2) Determination of Refractive index of prism (spectrometer)
(3) Determination of Focal length of a convex lens by u-v method.
(4) Find out Focal length of a convex lens by displacement method.
(5) Verification Ohm's law.

(6) Find out unknown resistance by meter bridge.
(7) Find out internal radius of hollow tube by vernier calipers.
(8) Find out volume of given cylinder by screw gauge.
(9) Determination of surface tension by Capillary rise method.
(10) Determination of coefficient of viscosity.
(11) Determination of coefficient of Thermal conductivity by searl's method.
(12) Verification of Newton's cooling law.

12.0 SUGGESTED LEARNING RESOURCES :

12.1 REFERENCE BOOKS :

S.No.	TITLE	AUTHOR, PUBLISHER, EDITION AND YEAR OF PUBLICATION	ISBN NUMBER
1	Applied Physics Vol. 1 & 2	Saxena & Prabhakar	
2	Physics	TTTI Publication	
3	Physics Vol. 1 &2	Halliday & Resnick R	
4	Engineering Physics	Gaur & Gupta	
5	Principle of Physics	Brij Lal & Subramanyan	
6	Physics For Technical Education	Ls Zednov	
7	Physics Part-I & II	Halliday D & Resnickr	
8	Physics Part-I & II for 10+2 Students	Das S.K., Sisodiya M.L., Neher P.K., Kachhawa C.M.,	
9	Applied physics for polytechnics	B.G. Dhande	
10	Applied Physics for polytechnics	Bhandarkar	
12	Modern Physics	Rao, B.V.N.	

13.0 TENTATIVE LIST OF LABORATORY EQUIPMENT:

1. Screw Guage, Vernier Callipers, Spherometer.
2. Surface Tension Apparatus (Capillary Tubes, Glass Strip, Rubber Tube, Clamp Stand).
3. Viscocity Apparatus (Poiselle's method).
4. Newtons law of cooling Apparatus. (With Calorimeter, Thermometer, Stop Clock).
5. Searle's Apparatus for finding "J"/Searle's Thermal conductivity Apparatus.
6. Copper calorimeter, physical balance, stop watch/stop clock, thermometer of Different Accuracy.

7. Travelling microscope with three motions/vertical and horizontal motion.
8. Optical Bench, two bar, lens holders, pin on stand, spirit label, Meter Scale, Optical needle.
9. Prism (for pin experiment), drawing, Board, Convex lenses, glass slab, mirror concave.
10. Spectrometer.
11. Bar magnet, compass needle.
12. Ohm's law apparatus, voltmeter, ammeter, multi-meter, rheostat, plug keys, insulated wires, resistance wires.

14.0 LIST OF EXPERTS AND TEACHERS WHO CONTRIBUTED IN THIS CURRICULUM :

1. Dr U.S. Yadav Sel. Grade Lecturer, S.V. Polytechnic, Indore
2. Shri Sandeep Pare Guest Faculty, S.V .Polytechnic, Indore
3. Dr. P.D. Sharma Govt. Polytechnic, Ujjain

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1.0 SUBJECT TITLE : MATHEMATICS
2.0 SUBJECT CODE : 103

3.0 PAPER CODE : 6033

4.0 SEMESTER : ONE

5.0 RATIONALE :

Mathematics forms backbone for all technologies and hence occupies an important place in the curriculum of polytechnic education. The subject is equally important for the future self-development of Polytechnic students. To understand difficult concepts in engineering courses and to solve many problems of design and development, a good background in mathematics is essential. With the above view in mind, the necessary content for the course Mathematics is derived. It is presumed that this course contents will provide a suitable foundation for engineering applications which technician and engineer supposed to come across in his field of studies.

6.0 TEACHING AND EXAMINATION SCHEME ;

THEORY COMPONENT							PRACTICAL COMPONENT					
LECTURES HRS. PER WEEK	CONTINUOUS EVALUATION			END OF THE TERM / SEMESTER EVALUATION		TOTAL MARKS (THEORY)	PRACTICAL HRS. PER WEEK	CONTINUOUS EVALUATION LAB. WORK	END OF THE TERM/ SEMESTER EVALUATION		TOTAL MARKS (PRAC.)	**TOTAL MARKS (THE. + PRAC.)**
	TERM WORK	PROGRESSIVE TESTS		THEORY PAPER					PRACT./ ORAL EXAM. (VIVA -VOCE)			
		I	II	MARKS	DURATION (Hrs.)				MARKS	DURATION (Hrs.)		
08	30	10	10	100	03	150	-	-	-	-	-	150

7.0 ENABLING OBJECTIVES :

The students after completing the course will be able to –

7.1 solve problems using the basic concepts of algebra – vector and scalar quantities, arithmetic and geometric progression (AP & GP).
7.2 use trigonometric functions.
7.3 solve problems using different functions and types of matrices.
7.4 solve problems using concepts of coordinate geometry.
7.5 calculate statistical parameters (Mean, Mode, Medium, Mean deviation and standard deviation).
7.6 solve problems using differential and integral calculus.
7.7 add, subtract or multiply the two vectors.

8.0 DETAILED COURSE CONTENTS

CHAPTER – 1.0 ALGEBRA

1.1 Permutation
- Meaning of factorial 'n'
- Permutation of 'n' dissimilar thing taken 'r' at a time,

1.2 Combination
- Combination of n dissimilar things taken 'r' at a time,

1.3 Binomial Theorem
- Statement of the theorem for positive integer
- General Term, Middle term, Constant term

1.4 Partial Fractions
- Define a proper-improper fraction
- Break a fraction into partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors.

1.5 Determinant
- Concept & principles of determinants
- Properties of determinant
- Simple examples.

1.6 Complex Numbers
- Algebra of Complex Numbers
- Polar form

CHAPTER – 2.0 TRIGONOMETRY

2.1 Allied angles.
2.2 Trigonometrical ratios of sum and difference of angles, (Only statement)
2.3 Sum and difference of trigometric ratios (C-D formula)
2.4 Multiple angles (Only double angle and half angle)
2.5 Properties of triangle (without proof)

CHAPTER – 3.0 MATRIX

3.1 Definition of Matrix.
3.2 Types of Matrix.
- Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non Singular Matrices.

3.3 Adjoint of a Matrix.
3.4 Inverse of a Matrix.

CHAPTER – 4.0 CO-ORDINATE GEOMETRY

4.1 Co-ordinate System : Cartesian and Polar.
4.2 Distance, Division, Area of a triangle.
4.3 Locus of a point and its equation.
4.4 Slope of St. Line
- Angle between two St. lines.
- Parallel and perpendicular St. lines.

4.5 Standard and general equation of St. line.
Point of intersection of two st lines.

CHAPTER-5.0 STATISTICS

5.1 Measures of Central tendency (Mean, Mode, Median).
5.2 Measures of Dispersion (Mean deviation, standard deviation)

CHAPTER-6.0 DIFFERENTIAL CALCULUS

6.1 Definition of constant, variable, function.
6.2 Value of the function
6.3 Concept of limit of a function.
6.4 Definition and concept of differential coefficient as a limit.
6.5 Standard results.
6.6 Derivatives of sum, difference, product, quotient of two functions.
6.7 Diff. coeff. of function of a function.
6.8 Diff. coeff. of implicit function.
6.9 Logarithmic Differentiation.
6.10 Differential coeff. of Parametric function.

CHAPTER-7.0 INTEGRAL CALCULUS

7.1 Definition as a inverse process of differentiation
7.2 Standard Results (including inverse function)
7.3 Methods of Integration
- Substitution
- Integration by parts

- Breaking up into partial fraction

7.4 Concept of Definite Integral

CHAPTER-8.0 VECTOR ALGEBRA

8.1 Concept of Vector and Scalar Quantities.
8.2 Different types of vectors.
8.3 Addition and subtraction of vectors.
8.4 Components of a vector
8.5 Multiplication of Two Vectors ;
- Scalar Product
- Vector Product
- Applications (Work done, power & reactive power)

9.0 SUGGSTED SPECIFICATION TABLE (THEORY) :

Ch. No.	Chapter Title	Hours	Marks			
			R	U	A	Total Marks
1.	Algebra	14	06	05	02	13
2.	Trigonometry :	14	05	05	03	13
3.	Matrix	13	05	05	02	12
4.	Co-Ordinate Geometry	15	05	04	02	11
5.	Statistics	16	07	05	04	14
6.	Differential Calculus	16	05	05	02	12
7.	Integral Calculus	16	05	05	03	13
8.	Vector Algebra :	15	05	05	02	12
		120				100

Abbreviations: **R** = Remembrance level, U = Understanding level, A = Application level

10.0 SUGGESTED IMPLEMENTATION STRATEGIES :

- Chalk & talk method to explain the various laws, theorems etc.
- Demonstration and use of Log-tables.
- Classroom practices for different typical exercises.
- Use of derivation and formulas and provision of charts
- Tutorials should be conducted for explaining difficult concepts.

11.0 SUGGESTED LIST OF EXPERIENCES/TUTORIALS ;

12.0 SUGGESTED LEARNING RESOURCES :

- Charts
- Workbook
- Practice sheets
- Log Table
- Question Bank
- Solved question papers.

12.1 REFERENCE BOOKS :

S.No.	TITLE	AUTHOR, PUBLISHER, EDITION AND YEAR OF PUBLICATION	ISBN NUMBER
1	Mathematics For Polytechnics Vol. I And Ii	T.T.T.I. Bhopal	
2	Differential Calculus	Gorakh Prasad	
3	Integral Calculus	Gorakh Prasad	
4	Co-Ordinate Geometry	By S.L. Loni	
5	Engineering Mathematics	Dr. S.K. Chouksey (M.P. Hindi Granth Akadami) & Manoj Singh	
10	Mathematical Statistics	Ray And Sharma	
11	Higher Engineering Mathematics	B.S. Grewal, Griha Prakashan, Pune, 1996 or latest	
12	Mathematics for Polytechnics	Deshpande S.N., Khanna Pub., New Delhi1995 or latest	
13	Engineering Mathematics	Grewa, l B.S; Khanna Pub., New Delhi1997 or latest	
14	Engineering Mathematics	Prasad, I.B.; TTTI, Bhopal	
15	Mathematics for Polytechnics Vol. – I & Vol. – II	TTTI, Bhopal	
16	Applied Mathematics	Wartiker P.N., Griha Prakashan Pune, 1996 or latest	

13.0 TENTATIVE LIST OF LABORATORY EQUIPMENT :

1. Calculator.
2. Templates

14.0 LIST OF EXPERTS AND TEACHERS WHO CONTRIBUTED IN THIS CURRICULUM :

1.	Dr. S.K. Chouksey	- Lecturer	-	Womens' Polytechnic, Indore
2.	Smt. Anita Rane	- Lecturer	-	S.V. Polytechnic, Indore
3.	Smt. K. Bhagwat	- Lecturer	-	S.V. Polytechnic, Indore
4.	Smt. S.D. Wagh	- Lecturer	-	S.V. Polytechnic, Indore
5.	Dr. B.P. Raghuwanshi	-Lecturer	-	Polytechnic, Ujjain
6.	Shri Manoj Singh	-Lecturer	-	S.V. Polytechnic, Bhopal
7.	Shri A.K. Shakyawar	- Lecturer	-	Polytechnic, Khandwa

1.0 SUBJECT TITLE : Computer Fundamentals and Its Application

2.0 SUBJECT CODE : 104

3.0 PAPER CODE :

4.0 SEMESTER : 1st Semester

5.0 RATIONALE :

Today's age is computer age. Most of our daily activities are being influenced by the use of computers. While in areas like science and technology, improvements cannot be achieved without computers. It has become necessary for each and every student to have a basic knowledge of computers, related devices and Applications. This subject is being offered to acquaint the students about fundamentals of Computers and peripherals, basics of operating system, and basic application software like Ms word, MS PowerPoint, and MS Excel

6.0 TEACHING AND EXAMINATION SCHEME :

THEORY COMPONENT							**PRACTICAL COMPONENT**					
LECTURES HRS. PER WEEK	CONTINUOUS EVALUATION			END OF THE TERM / SEMESTER EVALUATION		TOTAL MARKS (THEORY)	PRA-CTI-CAL HRS. PER WEEK	CONTI-NUOUS EVALU-ATION	END OF THE TERM/ SEMESTER EVALUATION		TOTAL MARKS (PRAC.)	**TOTAL MARKS (THE.+PRAC.)**
	TERM WORK	PROGRESSIVE TESTS		THEORY PAPER				LAB. WORK	PRACT./ ORAL EXAM. (VIVA -VOCE)			
		I	II	MARKS	DUR-ATION (Hrs.)				MARKS	DURA-TION (Hrs.)		
4	15	10	10	100	3 hrs.	135	2	15	50	3 hrs.	65	200

8.0 ENABLING OBJECTIVES :

The students after completing the course will be able to –

7.1. Describe the different parts of a PC and how they are arranged,
7.2. Explain the working and need of input/output devices.
7.3. Classify computers based on their characteristics.

7.4. Demonstrate awareness of the development of the Intel family of microprocessors.
7.5. Explain different numbers system and their conversion.
7.6. Describe primary and secondary data storage device and be able to specify appropriate applications for them.
7.7. Appreciate the features of system and application software.
7.8. Understand the working of operating system.
7.9. Appreciate the need of systems security.
7.10. Use e-mail and Internet for information search.

8.0 DETAILED COURSE CONTENTS :

Chapter – 1.0 Computer Organization

Block Diagram of computer system: Central Processing Unit, Memory Unit, ALU, Control unit, Input & Output devices.

1.1 Input Device Categorizing input hardware, KeyBoard, Card Readers, Scanning Devices, Bar Code Readers, OCR, OMR, MICR, Pointing Device – Mouse & Its Types, Light Pen, Touch Devices, Web Camera, Microphone, Joystick, Digitizing tablet.

1.2 Output Device – Printers: Impact & nonimpact printers, Dot matrix, Laser, Inkjet, Thermal Printers, Plotters, Monitors: CRT, TFT, Plasma, LCD Projector, DLP Projector, Speaker.

Chapter – 2.0 Evolution And Generation Of Computer Systems

2.1 Computer System Characteristics and capabilities - Speed, Accuracy, Reliability, Memory Capabilities, Repeatability

2.2 Types of Computers & its Applications
Analog, Digital & Hybrid, General & Special Purpose Computer, Application of computer system

2.3 Computer Generations & Classification of Computer Systems
Characteristics of Micros, Minis, Mainframes & Super Computer.

2.4 Evolution of micro-computers: PCs: Comparative study w.r.t. Micro-processor, clock speed, data bus, controllers, memory, peripheral interface of PC to Pentium-IV computer systems.

Chapter – 3 Number System , Codes & Data Representation.

Decimal, Binary, Octal, Hexadecimal number systems. Inter-Conversion from decimal to binary, octal, hexadecimal, conversion of binary number System to decimal, hexadecimal. Codes used for information exchange between computers–ASCII, Unicode, Data representation- Bit, Nibble, Byte, KiloByte, MegaByte, GigaByte, TeraByte, PetaByte etc.

Chapter – 4 Storage Devices.

Storage Fundamentals, Primary & Secondary Storage. RAM, dynamic and static ROM, PROM, EPROM, EEPROM, Tape storage Devices, Characteristics & limitations, Floppy & their types. Direct access Storage– Hard Disk, Disk Cartridges, Mass Storage Device Optical Disk , CD Rom, DVD, flash drive, ZIP drive
.

Chapter – 5 Computer Softwares & Language

5.1 System Software V/s Application Software. Types of System Software, Operating System, Loader, Linker, Language Processor, Assembler, Compiler and Interpreter, Device Driver.

5.2 CLASSIFICATION AND CHARACTERISTICS OF LANGUAGES- Machine language, Assembly language, High-level language, Generations of Computer Language

5.3 Application Software: working with MS-OFFICE components, creating editing, formatting and printing documents using MSWORD, Data analysis and charting with MSEXCEL, Creating and presenting slide show using MS POWERPOINT

Chapter – 6 Concept of Operating Systems

Introduction, Functions of operating system, Types –batch, single user, multiuser, multiprogramming, multitasking, multithreading, realtime , embedded, Network, Distributed CLI(Command Line Interface) and GUI modes of O.S. Booting Process, BIOS, POST, Boot Strap Loader

Chapter – 7 System security

Introduction to viruses, worms, Trojans, AntiViruses scanning & Removal of Viruses, safety measures- Firewall, updates, Patches.

Chapter – 8 Internet Applications

Introduction to internet, different services of internet- www, E-Mail, Chat (Textual/Voice), web-site access and information search, Browsers And Search Engines

9.0 SUGGESTED SPECIFICATION TABLE (THEORY):

CH. NO.	CHAPTER NAME	HOURS/PERIODS	TENTATIVE DISTRIBUTION OF MARKS			
			K	U	A	TOTAL MARKS
1.0	Computer organization		4	4	2	10
2.0	Evolution and generation of		8	5	2	15

	computer systems					
3.0	Number System , Codes & Data Representation		8	2	2	12
4.0	Storage Devices.		8	2	2	12
5.0	Computer Softwares & Language		5	5	10	20
6.0	Concept of Operating Systems		8	4	3	15
7.0	System security		4	2	2	8
8.0	Internet Applications		4	2	2	8
Total						100

Abbreviations: **K**=Knowledge level, **U** = Understanding Level, **A**=Application level

10.0 SUGGESTED IMPLEMENTATION STRATEGIES :

Input cum discussion and practical based on theory

11.0 SUGGESTED LIST OF EXPERIENCES/TUTORIALS : PRACTICAL CODE –222121

LIST OF EXPERIMENTS/DEMONSTRATIONS/TUTORIALS

- Study the uses of input and output devices
- study the uses of storage devices
- Backup of data on tape, floppy & hard disk, CD, DVD and in PEN drive
- use of windows media player, recording, editing playing sound and video files.
- 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 & copy
  -External commands – Sys, attrib, format, edit, find, diskcopy, Xcopy, backup & restore
- PRACTICE ON WINDOWS 2000/ XP/Vista
  -Starting Windows, Exploring the desktop, Arranging windows, My Computer, The start button, Creating Shortcuts, Practice on moving and sizing of windows.

-Practice on Windows Explorer
-File organization: creating, copying, moving, renaming and deleting and use of recycle bin.
-Practice on Windows Accessories – Notepad, WordPad and Paint, Character Map.
-Creating editing, formatting, previewing and printing documents using Wordpad.
-Shutting down windows.

- PRACTICE ON MS-WORD
  -Creating editing, formatting, saving, previewing and printing documents.
  -Auto Text, AutoComplete, AutoCorrect, grammar and spellchecker, Find and replace of text.
  -Insert, modify table.
  -Mail merge, Macro, Hyperlink
  -Header, footer, Watermark.

- PRACTICE ON MICROSOFT EXCEL
  -Creating editing, formatting, saving, previewing and printing worksheet.
  -Use of formula and functions.
  -Split windows and freeze pans.
  -Create, edit, modify, print worksheet/charts.
  -Import & Export Data & worksheet
  -Pivot table- create, modify
  -Sorting & Filter data
  -Header, footer, Watermark.

- PRACTICE ON POWERPOINT
  - Create, edit, insert, move, slides.
  - Open and save presentation.
  - Insert Object, picture, Diagram, chart, Table, Movie & Sound, Hyperlink.
  - Slide design, layout, background.
  - slide show, setup, action button, animation scheme, custom animation, Slide transition and mater slide.

- PRACTICE ON Internet
  Connecting to internet
  Web browsing
  Searching websites
  Email services
  Creating email accounts & sending and receiving e-mails with or without attachments.

12.0 SUGGESTED LEARNING RESOURCES :

12.1 Textbooks/Reference books (as mentioned below).

12.1 **REFERENCE BOOKS :**

S.No.	TITLE	Author Publisher & Address	ISBN No.
1.	Fundamentals of Computers	E. Balagurusamy, Tata Mc-Graw Hill, New Delhi	9780070141605
2.	Computer Today	S K Basandra, Galgotia Publications	8186340742
3.	Digital Computer Fundamentals	BARTEE, THOMAS C. Tata Mc-Graw Hill, New Delhi	0074604007

13.0 TENTATIVE LIST OF LABORATORY EQUIPMENT ;

13.1 Computer systems with necessary software

14.0 LIST OF EXPERTS AND TEACHERS WHO CONTRIBUTED FOR THIS CURRICULUM ;

11. Ms Rashmi Gupta, Programmer, S.V. Govt. Polytechnic, Bhopal
12. Mr. Sukhlal Sangule, Lecturer, CSE, S. V. Govt. Polytechnic, Bhopal
13. Ms. Tripti Dwivedi, Lecturer, S. V. Govt. Polytechnic, Bhopal
14. Mr. N. K. Sahu, Programmer, Govt. Kalaniketan Polytechnic, Jabalpur

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1.0 SUBJECT TITLE : PROFESSIONAL ACTIVITIES (PA).

2.0 SUBJECT CODE : 105.

3.0 PAPER CODE : -

4.0 SEMESTER : ONE

5.0 RATIONALE :

In this rapidly changing technological world, engineers and technicians are expected to adapt to different situations and perform multiple roles. Hence, it is expected that students must be given ample opportunities to develop multiple skills to excel in the present day circumstances. As engineers, it is vitally

important to be able to present/communicate thoughts and ideas effectively using a variety of tools and medium.

Job requirement of technicians also demand, confident and well groomed personality. Also due to stress on quality and time bound activities in the world of work, time management is also equally important. In the industry, the students have to work independently as well as in a group, therefore, apart from their subject knowledge, they are called upon to work as leader of a group of workers, be a team member of a task group. They are also to lead and participate in group discussions, speak extempore on some current subject or technology, present a paper on some project, solve problems and some times even counsel people working with/under him/her. In the polytechnic our student stays for almost three years or so, apart from developing professional/technical skills in the students, the students are also required to develop certain generic skills for total personality development.

Hence, this course has been designed to develop the skills such as presentation skills, learning to learn skills, time management, personality development in the technician passouts.

This course is therefore of a special nature. These generic skills need to be developed in integration with the technical subjects throughout the three years duration.

6.0 TEACHING AND EXAMINATION SCHEME:

THEORY COMPONENT					**PRACTICAL COMPONENT**				
LECTURES	CONTINUOUS EVALUATION		END OF THE TERM / SEMESTER EVALUATION	TOTAL MA	PRA-CTI-CAL HRS. PER WEEK	CONTI-NUOUS EVA-LUA-TION	END OF THE TERM/ SEMESTER EVALUATION	TOTAL MA	**TOTAL MAR**
	TERM WORK	PROG-RESSIVE TESTS	THEORY PAPER			LAB. WORK	PRACT./ ORAL EXAM. (VIVA -VOCE)		

HRS. PER WEEK		I	II	MARKS	DUR-ATION (Hrs.)	RKS (THEORY)			MARKS	DURA-TION (Hrs.)	RKS (PRAC.)	**KS (THE. + PRAC.)**
-	-	-	-	-	-	-	02	Grades to be awarded				

7.0. ENABLING OBJECTIVES :

The students after completing the course will be able to –

8.1 present themselves effectively verbally and in writing.
8.2 develop learning to learn skills.
8.3 develop study skills.
8.4 search the information from different sources on the given topic.
8.5 manage time effectively.
8.6 learn the different techniques of yoga, meditation, exercises etc.
8.7 develop the well groomed personality.

8.0 DETAILED COURSE CONTENTS :

CHAPTER – 1.0 : PRESENTATION SKILLS :

1.1 Oral Presentation :

- Need of effective oral presentation.
- Characteristics of good oral presentation.
- Ways of Oral Presentation (Seminar, Viva-voce, Interview, Group Discussion, Lecturing, Power Point Presentations etc.)
- Gestures/Mannerism during oral presentation Media, methods used for effective oral presentation.
- Assessment of oral presentation.

1.2 Written Presentation :

- Need and characteristics of written presentation.
- Ways of written presentation (Report writing, manual, handout, notes etc.).
- Grammar, Punctuation, referencing paragraphing during written presentation.

CHAPTER – 2.0 LEARNING TO LEARN SKILLS :

2.1 Need of Learning to Learn Skills.

2.2 Type of Learning Skills (Learning face to face, Individualized learning, Distance learning, Self-learning).
2.3 Developing Learning to Learn Skills.

CHAPTER – 3.0 STUDY SKILLS :

3.1 Methods of Good Study Habits
3.2 Note Taking
3.3 Developing Reading Skills.

CHAPTER – 4.0: INFORMATION SEARCH :

4.1 Objectives of information search.
4.2 Ways of information search (Internet surfing, Library search, Abstracts, Journals, books etc.)
4.3 Assimilation and presentation of information.

CHAPTER – 5.0 TIME MANAGEMENT :

5.1 Principles of Time Management.
5.2 Time Management matrix.
5.3 Criteria governing Time Management.
5.4 Possible time waster

CHAPTER- 6.0 PERSONALITY :

6.1 Concept and meaning of personality.
6.2 Characteristics of good personality.
6.3 Factors influencing personality.
6.4 Types of personality.
6.5 Need for desirable personality for success.
6.6 Qualities of complete personality.

CHAPTER – 7.0 PERSONAL GROOMING :

8.8 Posture and Health.
8.9 Types and importance of posture.
8.10 Importance of yoga and meditation.
8.11 Factors affecting good health-diet, exercise personal cleanliness, sleep and rest.
8.12 Use of cosmetics.
8.13 Dress Code
8.14 Physical Fitness and Inner Strength.

9.0 SUGGSTED SPECIFICATION TABLE (THEORY) : - N.A -

10.0 SUGGESTED IMPLEMENTATION STRATEGIES :

10.1 Students should be made to listen to effective presentations of experts, comprehend that and then summarise that orally and in writing. Feedback should be given immediately after each task.

10.2 Also they should be given certain task/assignment on which they need to collect new information in specified time.

10.3 Students should be able to take decision that the particular information can be gathered from such and such sources and should be able to present that confidently in verbally or in writing.

In this particular subject only practical hours are allotted, but, it may be essential to take up certain inputs followed by assignments This may include expert lectures, group discussion , plenary session etc.

11.0 SUGGESTED LIST OF EXPERIENCES/TUTORIALS :

11.1 Seminar Presentation on Specific topic for fixed time duration.

11.2 Information Collection on a particular topic followed by presentation in specified time duration.

11.3 Visit to multinational outlet for observing personality traits of officials and preparing detailed report.

11.4 Demonstration exercise by personality experts.

11.5 Arranging expert lecturers of well known personality like Shiv Khera etc.

11.6 Selected Book Review.

12.0 SUGGESTED LEARNING RESOURCES :

12.1 Reference Books.

12.2 TV Programmes

12.3 News Paper Clipping

12.4 Video Programs.

12.5 Learning Packages

12.6 Computer with internet facilities

12.7 Television

12.8 Charts.

12.9 Cassettes of expert lectures.

12.1 Reference Books :

S. NO.	TITLE	AUTHOR, PUBLISHER, EDITION & YEAR	ISBN NUMBER
1	How to achieve success and happiness	Sultan Chand and Sons,New Delhi	
2	How to develop effective	Dr Mittal and Agarwal CS	

	personality		
3	The Art of Public Speaking	Stephen E Lucas	
4	Public Speaking and Influencing Business	Dale Carnegie	

13.0 TENTATIVE LIST OF LABORATORY EQUIPMENT :

(1) T.V.
(2) Tape Recorder
(3) Wireless Mike
(4) Micro Phone Collar Mike
(5) Computer with Internet facility.

14.0 LIST OF EXPERTS AND TEACHERS WHO CONTRIBUTED FOR THIS CURRICULUM :

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RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

Programme Name : Three years **Diploma in Computer Science and Engineering** / Computer Hardware & Maintenance

Name of scheme: **Dip-** from **Session 2009-10**

Scheme of Studies and Examinations for: **- SEMESTER-I**

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT								PRACTICAL COMPONENT						TOTAL
			LECT-URES	CONTINUOUS EVALUATION			END OF THE TERM / SEMESTER EVALUATION			TOTAL MARKS	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION			TOTAL	
			Hrs. PER WEEK	TERM WORK	PROG-RESSIVE TESTS (TWO)		THEORY PAPER					LAB. WORK	PRACTICAL/ ORAL EXAMINATION (VIV A)				
					I	II	NO.	MARKS	DUR-ATION (Hrs.)				NO.	MARKS	DUR-ATION (Hrs.)		
101	Communication skills	5161	06	30	10	10	01	100	03 Hrs	150	-	-	-	-	-		150
102	Physics	6031	06	15	10	10	01	100	03 Hrs	135	04	15	01	50	03 Hrs	65	200
103	Mathematics	6033	08	30	10	10	01	100	03 Hrs	150	-	-	-	-	-	-	150
104	Computer Fundamentals And its Applications		06	15	10	10	01	100	03 Hrs	135	04	15	01	50	03 Hrs	65	200
105	Professional Activities		-	-	-	-	-	-	-	-	02	GRADES TO BE AWARDED					
TOTAL			26	90	40	40	04	400	-	570	10	30	02	100	-	130	700

GRAND TOTAL

1.	Number of Theory Papers	04
2.	Total theory Marks	400
3.	Number of Practicals	02
4.	Total Practical Marks	100
5.	Total marks of term work+ lab work + Prog. Asst.	200

Passing marks for	(a) Theory	
	(b) Practical	
	(c) Sessional	