

**MATS School of Engineering & Technology**

**MATS University**

**Raipur**



**Syllabus Scheme**

**(1<sup>st</sup> Semester)**

**For**

**Bachelor of Engineering**

**All Branch**

**Subject Code for MATS School of Engineering & Tech. Dept.**

**1<sup>st</sup> Semester**

<b>S.No.</b>	<b>Subject Code</b>	<b>Subject Name</b>
<b>1</b>	<b>BE100</b>	Engineering Mathematics
<b>2</b>	<b>BE101</b>	Basic Electrical Engineering
<b>3</b>	<b>BE102</b>	Communication Skill
<b>4</b>	<b>BE103</b>	Engineering Drawing
<b>5</b>	<b>BE104</b>	Engineering Physics
<b>6</b>	<b>BE105</b>	Engineering Drawing Lab
<b>7</b>	<b>BE106</b>	Engineering Physics Lab
<b>8</b>	<b>BE107</b>	Engineering Electrical Lab
<b>9</b>	<b>BE108</b>	Workshop Practice – I
<b>10</b>	<b>BE109</b>	Computer Lab



**MATS School of Engineering & Technology**  
**MATS University, Raipur Scheme of Teaching**  
**& Examination I<sup>st</sup> Semester**  
**(All Branches of Engineering)**



S. No.	Course code	SUBJECT	Periods per week		Evaluation Scheme		Total Marks
			L	P	IM	ESE	
<b>THEORY</b>							
1	BE 100	Engineering Mathematics	5	0	30	70	100
2	BE 101	Basic Electrical Engineering	5	0	30	70	100
3	BE 102	Communication Skill	5	0	30	70	100
4	BE 103	Engineering Drawing	5	0	30	70	100
5	BE 104	Engineering Physics	5	0	30	70	100
<b>PRACTICAL</b>							
6	BE 105	Engineering Drawing Lab	0	3	20	30	50
7	BE 106	Engineering Physics Lab	0	3	20	30	50
8	BE 107	Engineering Electrical Lab	0	3	20	30	50
9	BE 108	Workshop Practical I	0	3	20	30	50
10	BE 109	Computer Lab	0	3	20	30	50

**L-Lecturer, P-Practical, ESE- End Semester Examination, IM-Internal Marks**

**MATS UNIVERSITY,  
RAIPUR**

Semester	:	1 <sup>st</sup> BE Course
Branch	:	Common
Subject	:	Engineering Mathematics
Total Theory Periods	:	40
Total Tutorial Periods	:	15
Code	:	BE 100

**UNIT-1**

**MATRICES:** Rank & inverse of matrices by elementary transformation. Gauss-Jordan method of finding the inverse of a matrix. Normal form of a matrix. Consistency and inconsistency of linear system of equations. Eigen values and eigen vectors of a matrix. Caley- Hamilton theorem.

**UNIT-2**

**Differential Calculus:** Successive Differentiation, Leibnitz's theorem; expansion of functions in Taylor's and Maclaurin series; tracing of simple curves.

**UNIT-3**

**Integral calculus:** Reduction formula, application of integration to rectifications, Quadrature, volume of revolution, centre of gravity and moment of inertia.

**UNIT-4**

**Partial Differentiation:** Partial derivatives, Euler's theorem on homogeneous functions, maxima and minima of functions of two variables, Lagrange's method of undetermined multipliers, jacobians, differentiation under integral sign.

**UNIT-5**

**Ordinary Differential Equations and Applications:** Exact differential equations, reducible to exact form; first order differential equations (non linear); application to simple electrical circuits and heat flow.

**Theory of equations:** Roots of polynomial equations, relations between roots and coefficients, transformation of equations, removal of terms, solution of cubic and biquadratic equations-Cardin's and Ferrarie's method.

**Name of text Books:**

1. Higher Engineering Mathematics by B.S.Grewal (40<sup>th</sup> edition)-Khanna Publisher.
2. Advanced Engineering Mathematics by Erwin Kreyszig (8<sup>th</sup> edition)-John Wiley & Sons.

**Name of Reference Books:**

1. Differential Calculus by Gorakh Prasad-Pothisala Private Limited.
2. Advanced Engineering Mathematics by R.K.Jain and S.R.K. Iyengar-Narosa Publishing House.
3. Applied Mathematics by P.N.Wartikar & J.N.Wartikar Vol-II -Pune Vidyarthi Griha Prakasan, Pune.
4. Integral Calculus by Gorakh Prasad-Pothisala Private Limited.

## MATS UNIVERSITY, RAIPUR

Semester	:	1 <sup>st</sup> BE Course
Branch	:	Common
Subject	:	Basic Electrical Engineering
Total Theory Periods	:	40
Total Tutorial Periods	:	15
Code	:	BE 101

### UNIT – I

**D.C. Networks:-** Basic Electrical Components, ohm's law, resistance in series, resistance in parallel, short and open circuit equivalent resistance. Kirchoff's law, node voltage and mesh current methods, delta- star and delta/ star conversion, classification of network elements, superposition theorem, thevenin's and Norton's theorem, maximum power transform theorem.

### UNIT - II

**Single phase AC circuits:-** Solution of R.L.C. series circuit, the J operator complex representation of impedance, phasor diagram, power in complex notation, solution of parallel and series parallel circuits, series and parallel resonance.

**Three phase AC circuits:-** Delta and star connection, line and phase quantities, solution of three phase circuits, balanced supply voltage and balanced load, phasor diagram, measurement of power in three phase circuit.

### UNIT – III

**Magnetic circuits:-** B-H Curve, Solution of magnetic circuit, Hysteresis and eddy current losses, difference b/w elect/magnetic circuit.

**Transformers:-** Construction, EMF equation, rating, phasor diagram on no load and full load equivalent circuit, regulation, losses efficiency all day efficiency calculation, open and short circuit.

### UNIT - IV

**DC Machines:-** Construction, EMF and Torque equation, classification and application and characteristics of DC motors.

**Single and three phase Induction motors :-** Construction, principles of operation, Its curve starting of single- phase induction motor, application of three phase and single phase-phase inductor motor. .

### UNIT - V

**Electrical Measuring Instruments:-** Classification Indicating, recording and integrating types of instruments recording and integration types of instruments Deflection torque, controlling, torque Damping torque, DC PMMC instruments, shunts and multipliers moving iron ammeter and voltmeter construction, working principle of single phase wattmeter and energy meter.

#### Name of the Text Books:

1. Fitzrald and Higgonbothom, Basic Electrical Engineering, Fifth Edition, McGraw Hill.
2. Del Torro, Vincent "Electrical Engineering Fundamentals", Second Edition Prentice Hall of India Pvt. Ltd.

#### Name of the Reference Books:

1. Basic Electrical Engineering by I. J. Nagrath, (T.M.H.)
2. Cotton, H. "Advance Electrical Technology," ISSAC Pitman, Londo

## MATS UNIVERSITY, RAIPUR

Semester	:	1 <sup>st</sup> BE Course
Branch	:	Common
Subject	:	Communication Skill.
Total Theory Periods	:	40
Total Tutorial Periods	:	15
Code	:	BE 102

### Objective of the Course

To impart basic skills of communication in English through intensive practice to the first year UG students of engineering so as to enable them to function confidently and effectively in that language in the professional sphere of their life.

### UNIT - I

#### Desired Entry Behaviour

The student must have some basic command of English that is must be able to:

- Write reasonably grammatically
- Understand (if not use) at least some 2500 general purpose words of English
- Use some 2000 (at least 1500) general purpose words of English to express himself in writing and 1500 such words to talk about day-to-day events and experiences of life.
- Understand slowly-delivered spoken material in Standard Indian English, and
- Speak reasonably clearly (if not fluently) on routine matters with his fellow students.

### UNIT - II

#### Teaching Method

- The topics must be covered essentially through plenty of examples. Lecture classes must be conducted as lecture-cum-tutorial classes.
- It is a course that aims to develop skills. It is therefore “practical” in orientation. Plenty of exercises of various kinds must be done by the students both inside and outside the class-room.
- The teacher must not depend on a single or asset of two or three text books. He must choose his materials from diverse sources.
- Keeping in view the requirements of his students, the teacher may have to prepare some teaching and exercise materials.
- For practice in listening, good tape recorders can be used if the more advanced facilities (for example, language laboratory) are not available. In fact they can be used very fruitfully.
- The teacher must function as a creative monitor in the class-room.
- Minimum time should be spent in teaching phonetic symbols, stress, intonation, etc. The aim should be to enable the student to find out for himself the correct pronunciation of a word from a learner’s dictionary. In teaching speaking, emphasis should be on clarity, intelligibility and reasonable fluency rather than no “correct” pronunciation of words. Classroom presentation and group discussion sessions should be used to teach speaking.

## **UNIT - III**

### **Some Key Concepts**

Communication as sharing; context of communication; the speaker/writer and the listener/reader; medium of communication; barriers to communication; accuracy, brevity, clarity and appropriateness in communication.

### **Group Discussion**

Use of persuasive strategies including some rhetorical devices (for emphasizing, for instance; being polite and firm; handling questions and taking in criticism of self; turn-taking strategies and effective intervention; use of body language.

## **UNIT - IV**

### **Writing**

Selecting material for expository, descriptive, and argumentative pieces; business letters; formal report; summarizing and abstracting; expressing ideas within a restricted word limit; paragraph division; the introduction and the conclusion; listing reference material; use of charts, graphs and tables; punctuation and spelling; semantics of connectives, modifiers and modals; variety in sentences and paragraphs.

### **Reading Comprehension**

Reading at various speeds (slow, fast, very fast); reading different kinds of texts for different purpose (for example, for relaxation, for information, for discussion at a later stage, etc.); reading between the lines.

## **UNIT - V**

### **Speaking**

Achieving desired clarity and fluency; manipulating paralinguistic features of speaking (voice quality, pitch, tone, etc.); pausing for effectiveness while speaking; task-oriented, interpersonal, informal and semiformal speaking; making a short, classroom presentation.

### **Listening**

Achieving ability to comprehend material delivered at relatively fast speed; comprehending spoken material in standard Indian English, British English and American English; Intelligent listening in situations. Advantages of listening. Hearing and Listening; Essentials of Good Listening. Use of Modern Communication Devices; Telephonic Conversation.

### **Telephonic Conversation**

### **Listening Comprehension**

Achieving ability to comprehend material delivered at relatively fast speed; comprehending spoken material in Standard Indian English, British English and American English; intelligent listening in situations such as an interview in which one is a candidate.

### **Name of the Text Books:**

- Sharma RC & Mohan K - "Business Corresponding and Report Writing", Tata McGraw Hill, New Delhi, 1994.
- Alok Jain, P S Bhatia & A M Shiekh - "Professional Communication Skills; S. Chand & Company Ltd. 2005.
- Rajendra Pal and JS Korlahalli - "Essentials of Business Communication", Sultan Chand & Sons, 1997.
- A guide to Correct English - Oxford University Press, Ely House, London W.I., Latest Edition. (For Unit III)
- English Sentence Structure by T.C. JUPP, and JOHN MILNE, ELBS edition published by Heinemann Educational Books Ltd. - Latest Edition. (For Unit III)
- Bhaskar, W.W.S., and Prabhu, N.S., "English Through Reading", Vol.-I&II, MacMillan, 1978.
- D" Souza Eunice and Shahani, G., "Communication Skills in English", Noble Publishing House, 1977.
- Fiske, John "Introduction to Communication Studies", Rotledge London, 1990.
- Gartside, L. "Model Business Letters", Pitam, London, 1992.

- Longman, “Longman Dictionary of Current English”, (or „Oxford Advanced Learner’s Dictionary of Current English, OUP), 1998.
- Nurberg, Maxwell and Morris, Rosenblum “All about words”, General Book Depot, New Delhi, 1995.
- Shadhana Gupta “Communication Skill & Functional Grammar”, 2008.

**Name of the Reference Books:**

- Fiske, John - "Introduction to Communication Studies", Rotledge London, 1990.
- Geoffrey Leech & Jan Svartvik - "A Communicative Grammar of English", ELBS Longman, England.
- Bill Scott - "The Skills of Communicating", Jaico Publishing House, Mumbai, 2004.
- Gartside L- "Model Business Letters", Pitman, London, 1992.
- Krishna Mohan & N. P. Singh - "Speaking English Effectively"; MacMillan India, New Delhi; 2001.
- 100 Tests in VOCABULARY; Indian Institute of Publishing, Chennai.
- Communication skills for technical students, book-I; July 1995; compiled by the Curriculum Development Centre, TTTI, Western Region, Bhopal; Somaiya Publications Pvt. Ltd. New Delhi.
- A Prelude to English by L. A. HILL, Oxford University Press, Madras-Latest Edition.
- The English Errors of Indian Students by T.L.H. Smith - Pearse, I.E.S., Oxford University Press, Madras- Latest Edition.
- Grammar and Composition by P.R. Sarkar, Anand Marg Publications, Kolkata



**MATS UNIVERSITY,  
RAIPUR**

Semester	: 1 <sup>st</sup> BE Course
Branch	: Common
Subject	: Engineering Drawing
Total Theory Periods	: 30
Total Practical Periods	: 60
Code	: BE 103

**UNIT – I**

- a) Importance of Engineering Drawing, Scales: Representative Fraction, Type of Scale, Plain and Diagonal Scale.
- b) Engineering Curves: Conic section, Ellipse, parabola, hyperbola, Cycloidal Curves: Cycloid, Epicycloid, Hypocycloid, Involute.

**UNIT – II**

- a) Projection: Introduction, Principle of Projection, method of projection, planes of projection, four quadrants, first and third angle projection, reference line symbols for methods of projection, Orthographic projection.
- b) Projection of Points: Introduction point situated in first, second, third & fourth quadrant.  
Projection of lines: Introduction, line parallel to one or both the planes, line contained by one or both the planes, line perpendicular to one of the planes, line inclined to one plane and parallel to other. Line inclined to both the planes. [Simple problems only]

**UNIT – III**

- a) Projections of planes: Introduction, types of planes, projection of planes, projection of planes perpendicular to both the reference planes, perpendicular to one plane and parallel to the other plane, perpendicular to one plane and inclined to the other plane.
- b) Projections of Solids: Introduction, types of solids, projections of solids in simple position, projections of solids with axes inclined to one of the reference planes and parallel to the other, projections of solids with axes inclined to both H.P. and the V.P., section planes, types of sections, true shape of section, section of solids.

**UNIT – IV**

- a) Development of Surfaces: Introduction, methods of development, development of lateral surfaces of right solids, cube, prisms, cylinders, pyramids & cone.
- b) Isometric Projection: Introduction, Isometric axes, lines & planes, Isometric scale, Isometric projection and Isometric view of simple objects.

**UNIT – V**

Computer Aided Drawing: Introduction to CAD, benefits and limitation of CAD, CAD Software's, AutoCAD introduction, Basic Commands of AutoCAD, Concept of Layers, Dimensioning and text, Creation of two dimensional drawing.

**TEXT BOOKS:**

- (i) Bhatt, N.D., "Elementary Engineering Drawing", Charotar Book Stall, Anand
- (ii) George Omura, "Mastering AutoCAD" B.P.B. Publication, New Delhi

**REFERENCE BOOKS:**

- (i) Engineering Graphics – Laxminarayanan & V. and Vaish Wanar, R.S. Jain Brothers, New Delhi
- (ii) Engineering Graphics – Chandra, AM & Chandra Satish 1998.
- (iii) Engineering Graphics – K.L. Narayan and P. Kannaih, Tata McGraw Hill
- (iv) A Text book of Engineering Drawing (Plane & Solid Geometry) – N.D. Bhatt & V.M. Panchal, Charotar Publishing House
- (v) The Fundamental of Engineering drawing and Graphics Technology – French and Vireck, McGraw Hill.

**MATS UNIVERSITY,  
RAIPUR**

Semester	:	1 <sup>st</sup> BE Course
Branch	:	Common
Total Theory Periods	:	40
Total Tutorial Periods	:	15
Code	:	BE 104
Subject	:	Engineering Physics

**UNIT-I**

**Theory of Relativity**

Postulates of special theory of relativity, Michelson-Morley experiment, Lorentz transformation of space and time, Time Dilation, length contraction, variation of mass with velocity, equivalence of mass and energy. Relation between energy and momentum

**Quantum Physics**

De Broglie's wave length, Davison and Gerber's experiment, Compton Effect, Quantization of atomic energy, Electron spin, concept of wave packet & their properties, wave function & probability interpretation, Heisenberg's Uncertainty Principle, its elementary proof and applications. Duane-hunt limit for continuous X-ray, Moseley law of characteristic X-ray. Bragg's law of X-ray diffraction. Bragg's X-ray spectrometer. Electron optics: Bethe's law

**UNIT-II**

**Geometrical Optics and Acoustics**

- (i) **Geometrical Optics:** Combination of thin lenses, Cardinal points of coaxial system of thin lenses, location and properties of Cardinal points, Newton's formula.
- (ii) **Acoustics:** Magnetostriction oscillator and Piezo-electric oscillator for production of ultrasonic waves, determination of wavelength of Ultrasonic waves and its engineering applications, Basic requirements for an acoustically good hall. Reverberation and Sabine's formula for reverberation time, Absorption coefficient and its measurement, Factors affecting architectural acoustics and their remedy.

**UNIT-III**

**Solid State Physics**

Crystalline and amorphous solids, co-ordination number, atomic radius, density of packing, Miller indices, Separation between lattice planes, Symmetry elements. Structural features of nano particles and nano-materials.

Formation of energy bands in solids (Energy level approach), Classification of Solids, Conduction mechanism in semiconductor, charge neutrality equation, Fermi level in intrinsic and extrinsic semiconductors (Qualitative approach), Dependence of Fermi level on impurity concentration and temperature, Einstein relation, Photo conductivity, Hall effect.

**UNIT – IV**

**Solid State Devices:** Drift & diffusion current, photoconductivity; photoconductors, Hall Effect. Formation of P-N junction, solar cells, light dependent resistor, Photo diode, transistors: construction and operation of PNP and NPN, C-B, C-E, Configurations,

**Super Conductivity:** Super conductivity, Meissner effect, BCS theory, Type-I and Type-II superconductors, applications, SQUIDS.

**UNIT – V**

**Dielectric Materials:** Dielectric constant, Dielectric polarization, polar and non-polar dielectrics. Gauss's law, E, P and D vectors. Different types of polarization. Concept of internal fields, Clausius-Mossotti relationship, Langevin theory of dipolar orientation.

**Vector analysis**

Scalar and vector fields, gradient of a scalar field, Divergence and curl of a vector fields, Line integral of a vector field, Gauss-divergence theorem, Stoke's theorem.

**Lasers**-spontaneous and stimulated emission of radiation, Einstein coefficient, Parts of laser, types of lasers and their application.

**TEXT BOOKS:**

- Gaur and Gupta "Engineering Physics"
- Beiser, "Modern Physics", McGraw-Hill Inc., New Delhi.
- Avadhanulu and Kshirsagar "Engineering Physics".

**REFERENCE BOOKS:**

- Jenkins and White: "Optics", McGraw-Hill Book Company.
- Singh R.B. : "Physics of Oscillations and Waves"
- Ghatak A.K.: "Optics"
- Mani and Mehta: "Modern Physics", Affiliated East-West Press Pvt. Ltd, 1998.
- Sanjeev Puri: Modern Physics, narosa Pub. Co. 2004.
- Azroff: Solid State Physics, Tata McGraw-Hill, 2004.
- Kaplan: Nuclear Physics, Narosa Publishing, 1987.
- Theraja: B.L., Basic Electronics, S.Chand, 2002.
- Puri: Digital Electronics, Tata McGraw-Hill, 2002.
- Millman, J and Halkias: integrated Electronics, Tata McGraw-Hill, 2004.
- Tyagrajan and Ghatak: Lasers, Macmillan, 2001.
- Keiser: G Optical Fiber Communication, McGraw-Hill, 2000.

**MATS UNIVERSITY,  
RAIPUR**

Semester	: 1 <sup>st</sup> BE Course
Branch	: Common
Subject	: Engineering Drawing Lab
Total Theory Periods	: 00
Total Practical Periods	: 40
Code	: BE 105

- 1) Different types of lines, one sheet on lettering.
- 2) Types of scale, two problems on plain scale, two problems on diagonal scale.
- 3) different types of engineering curves, ellipse – general method of construction of ellipse & other method, problems on parabola, hyperbola, epicycloids, hypocycloid – general method & other method.
- 4) Orthographic projection- two problems on simple objects & two problems on complicated mechanical objects.
- 5) Isometric projection – two problems on simple objects, & two problems on ribs, conical, circular complicated section objects.
- 6) Projection of points – four problems on projection of a point is situated in first, second, third, fourth quadrant.
- 7) Projection of straight lines – two problems on line parallel to one or both the planes, line perpendicular to one of the plane, line inclined to one plane & parallel to other, line inclined to both the plane.
- 8) Development of surfaces – two problems on development of lateral surfaces of right solids, cube, prism, cylinder, pyramids.
- 9) Projection of solids in simple position, axes perpendicular to H.P, axis perpendicular to V.P, axis parallel to both H.P & V.P, projection of solids with axes inclined to one of the reference planes & parallel to other.

**TEXT BOOKS:**

- (i) Bhatt, N.D., "Elementary Engineering Drawing", Charotar Book Stall, Anand
- (ii) George Omura, "Mastering AutoCAD" B.P.B. Publication, New Delhi

**REFERENCE BOOKS:**

- (i) Engineering Graphics – Laxminarayanan & V. and Vaish Wanar, R.S. Jain Brothers, New Delhi
- (ii) Engineering Graphics – Chandra, AM & Chandra Satish 1998.
- (iii) Engineering Graphics – K.L. Narayan and P. Kannaih, Tata McGraw Hill
- (iv) A Text book of Engineering Drawing (Plane & Solid Geometry) – N.D. Bhatt & V.M. Panchal, Charotar Publishing House
- (v) The Fundamental of Engineering drawing and Graphics Technology – French and Vireck, McGraw Hill.

**MATS UNIVERSITY,  
RAIPUR**

Semester	:	1 <sup>st</sup> BE Course
Branch	:	Common
Code	:	BE 106
Subject	:	Engineering Physics Lab.

**LIST OF EXPERIMENTS**

1. To determine the value of the horizontal component of Earth's magnetic field by Schuster's method.
2. To determine the band gap energy of a semiconductor with the help of Junction diode.
3. To determine the Frequency of A.C. Mains with the help of an electrical vibrator.
4. To study characteristics of OR, AND, NOR, NAND, NOT logic gates.
5. To determine dispersive power of the material of a given prism for violet and orange colors of mercury light with a spectrometer.
6. To determine the wave length of light by Newton's ring method.
7. To determine the wave length of light by Fresnel's Biprism.
8. To determine the focal length of combination of two thin lenses by optical bench.
9. Determination of e/m by J.J Thompson's method.
10. To determine the moment of inertia of Flywheel about its own axis of rotation.
11. To determine the thermal conductivity of bad and good conductors by Lee's method.
12. To determine the surface tension by Jager's method.
13. To determine specific resistance of a wire by Carry Foster's Bridge.
14. Study of photo – cell and determination of Planck's constant.
15. Verification of DeMorgan's Laws of Boolean Algebra.
16. To determine the Forbidden energy gap of Semiconductor diode.
17. To determine the Mechanical equivalent of heat (J) by Calender & Barne's method.
18. Determination of wavelength of a spectral line using diffraction grating.

**TEXT BOOKS:**

- Gaur and Gupta "Engineering Physics"
- Beiser, "Modern Physics", McGraw-Hill Inc., New Delhi.
  - Avadhanulu and Kshirsagar "Engineering Physics".

**REFERENCE BOOKS:**

- Jenkins and White: "Optics", McGraw-Hill Book Company.
- Singh R.B. : "Physics of Oscillations and Waves"
- Ghatak A.K.: "Optics"
- Mani and Mehta: "Modern Physics", Affiliated East-West Press Pvt. Ltd, 1998.
- Sanjeev Puri: Modern Physics, narosa Pub. Co. 2004.

**MATS UNIVERSITY,  
RAIPUR**

Semester : 1<sup>st</sup> BE Course  
Branch : Common  
Subject : Engineering Electrical Lab.  
Code : BE 107

**List of Experiments**

1. To verify Thevenin's Theorems.
2. To verify Norton's Theorems.
3. To verify Maximum Power Theorem.
4. To verify Superposition Theorem.
5. To Measure Current, Power, Voltage and Power Factor of series L-C-R Circuit.
6. To Measure R and L of a Choke Coil.
7. To measure the Efficiency of Transformer by Direct Loading.
8. To find the Regulation of a Transformer.
9. To Perform OC, SC Test of Single Phase Transformer.

**Name of the Text Books:**

- Fitzrald and Higgonbothom, Basic Electrical Engineering, Fifth Edition, McGraw Hill.
- Hughes Edward (revised by Ian McKenzie Smith), "Electrical Technology", Seventh Edition, English Language Book Society Publication with Longman, 1995.

**Name of the Reference Books:**

- Basic Electrical Engineering by I. J. Nagrath, (T.M.H.)
- Cotton, H. "Advance Electrical Technology," ISSAC Pitman, London.
- Parker Smith S. (Ed. Parker Smith N. N., "Problems in Electrical Engineering", Tenth edition, Asia publications.
- Robert Boylestad & Louis Nashelsky, "Electronic Devices & Circuit Theory", Prentice Hall of India.

**MATS UNIVERSITY,  
RAIPUR**

Semester	: 1 <sup>st</sup> BE Course
Branch	: Common
Subject	: Workshop Practical I
Total Theory Periods	: 00
Total Practical Periods	: 80
Code	: BE 108

**Carpentry**

Timber, definition, engineering applications, seasoning and preservation, plywood and ply boards.

**Foundry**

Moulding sands, constituents and characteristics. Pattern, definition, materials, types, core prints. Role of gate, runner, riser, core and chaplets. Causes and remedies of some common casting defects like blow holes, cavities, inclusions.

**Welding**

Definitions of welding, brazing and soldering processes, and their applications, Oxyacetylene gas welding process, equipment and techniques, type of flames and their applications. Manual meta arc welding technique and equipment, AC and DC welding, electrodes, constituents and functions of electrode coating. Welding positions. Type of weld joint. Common welding defects such as cracks, undercutting slag inclusion, porosity.

**Metal Cutting**

Introduction to machining and common machining operations. Cutting tool materials. Definition of machine tools, specification and block diagram of lathe, shaper, drilling machine and grinder. Common lathe operations such as turning parting, chamfering and facing. Quick return mechanism of shaper. Difference between drilling and boring. Files-material and classification.

**Forging**

Forging principle, materials, operations like drawing, upsetting, bending and forge welding, use of forged parts.

**List of Jobs to be Made in the Workshop**

**Group A**

- |                                  |                  |       |
|----------------------------------|------------------|-------|
| 1. T-Lap joint and Bridle joint  | (Carpentry shop) | 4 hrs |
| 2. Mould of any pattern          | (foundry shop)   | 2 hrs |
| 3. Casting of any simple pattern | (foundry shop)   | 2 hrs |

**Group B**

- |   |  |       |
|---|--|-------|
| 1. (a) Gas welding practice by students on mild steel flat        |  | 2 hrs |
| (b) Lap joint by Gas welding                                      |  |       |
| 2. (a) MMA Welding practice by students                           |  | 2 hrs |
| (b) Square butt joint by MMA Welding                              |  |       |
| 3. (a) Lap joint by MMA Welding                                   |  | 1 hr  |
| (b) Demonstration of brazing                                      |  | 1 hr  |
| 4. Tin smithy for making mechanical joint and soldering of joints |  | 2 hrs |

### Group C

- |   |       |
|---|-------|
| 1. Job on lathe with one step turning and chamfering operations | 2 hrs |
| 2. Job on shaper for finishing two sides of a job               | 2 hrs |
| 3. (a) Drilling two holes of size 5 and 12 mm                   |       |
| Diameter on job used/to be used for shaping                     | 2 hrs |
| (b) Grinding a corner of above job on bench grinder             | 2 hrs |
| 4. Finishing of two sides of a square piece of filling          | 2 hrs |

#### Text Books:

- Begeman, M.L. and amstead, B.H. "Manufacturing Process", John Wiley, 1968.
- Chapman, W.A.J. and Arnold, E. "Workshop Technology", Vol. I & III, viva Low Priced Student Edition, 1998.
- Raghuwanshi, B.S. "Workshop Technology", Vol. I & II, Dhanpat Rai and Sons, 1998.
- Chaudhary, Hajra "Elements of Workshop Technology", Media Promoters & Publishers, 1997.
- Crawford, S. "Basic Engineering Processes", Hodder Stoughton, 1985.

#### REFERENCE BOOKS:

- Chapman, W.A.J. and Arnold E., "Workshop Technology" Vol. I & III, Viva Low price student Edition, 1998.
- Chaudhary, Hajra, "Elements of Workshop Technology" Media Promoters & Publishers, 1997.
- Raghuwanshi, B.s., "Workshop Technology" Vol I 7 II, Dhanpat Rai and Sons 1998.



**MATS UNIVERSITY,  
RAIPUR**

Semester	:	I <sup>ST</sup> BE Course
Branch	:	Common
Subject	:	Computer Lab
Total Practical Periods	:	48
Code	:	BE 109

**UNIT – I**

**AN OVERVIEW OF COMPUTER SYSTEM:**

Anatomy of digital computers, Memory units, Main and Auxiliary storage, Devices, Input Output, Classification of Computers, Applications of Computers in different fields, radix number system: decimal, binary, octal, hexadecimal numbers and their inter conversions.

**UNIT – II**

**OPERATING SYSTEM BASICS:**

The User Interface, Running programs, Managing files, Introduction to PC operating systems: Dos (Introduction of DOS, its features, basic Internal and External commands), Introduction to Windows And it's features.

**UNIT – III**

**INTRODUCTION TO MS-OFFICE:**

Introduction to MS-WORD, document creation, editing, printing and saving, spell check and mail merge, Process text by using text processor package such as MSWORD (Bold, Italics, Underline, Fonts, Text Alignment, Borders and Shading, Header and Footer) Introduction to Windows and it's features. MS-Excel spread sheet, Sorting, Merging, Drawing Graphics, Introduction to MS Power Point.

**UNIT – IV**

**INTRODUCTION TO COMPUTER NETWORKS AND DATA COMMUNICATION:**

Introduction to the basics concepts of Networks and Data communication how computer network works, LAN, MAN, WAN, Major features of INTERNET, Internet history, Introduction to the protocols, http, SMTP, FTP, Using the Internet, E-mails FTP search engines and domains.

**UNIT – V**

**PROGRAMMING LANGUAGES:**

Programming fundamentals, problem definitions, Algorithms, flow charts and symbols, Machine language, assembly language, high level language, Assemblers, Compilers Interpreters, Linkers, Loaders, and their inter relationship, Debuggers. Simple programs using C.

**TEXT BOOKS:**

1. Fundamentals of Computer Programming and Information Technology, by J.D. Dixit & Sangeeta Dixit, Laxmi Publication, New Edition – 2004.
2. "Exploring Internet", Nd Global.
3. "A First Course in Programming with C" by T Jeyapoovan, Vikas publishing House pvt. Ltd. New Delhi

**REFERECNE BOOKS:**

1. "Fundamentals of Information Technology" by Chetan Shrivastava, Kalyani Publication Noida.
2. "Computer Fundamentals", 3rd Edition by Pradeep Sinha & Pritit sinha, BPB Publication.
3. "Computer Today", Edition 2004 by Suresh K. Galgota Publication.
4. "Teach your self all about computer", Barry Press and Marica Press 2000, IDG books India.
5. "Using Computers and Information", by Jack B. Rochester, 1996, Que Edition & Training.
6. "Let Us C" by Yashvant kanetkar, BPB Publication, Third Edition – 1999.