GOVERNMENT COLLEGE OF ENGINEERING, JALGAON [M.S]

"Globally Accepted Engineers with Human Skills"

(An Autonomous Institute of Government of Maharashtra)

Curriculum for
First Year B. Tech.
(Common for all branches)
2017-18

Preamble :

The present engineering education needs to improve it's competitiveness and the employability of student community. In this age of information technology the education paradigm is shifting from teaching to learning and the role of teacher is a facilitator. The focus of education should be student centered and thrust should be on learning by the students than teaching by the faculty. The contact hours should be optimized to enable students to take up self-study to improve his/her skills. The curriculum of all programmes is designed using scientific method and tools of curriculum development and in consultation with various stake holders to satisfy the programme specific criteria and in consistence with Vision and Mission of Institute in general and that of Department in specific.

Curriculum structure is credit based and evaluation is grade based. The total numbers of credits of four year B.Tech degree programme are 184 uniformly distributed over eight semesters, i.e.23 credits per semester. Continuous assessment process is adopted for evaluation of credit courses. Evaluation of theory course contains four components viz internal sessional assessment (ISA), in semester examination 1 (ISE- I), in semester examination 2 (ISE- II) and end semester examination (ESE) while evaluation of practical course contains two components viz internal continuous assessment (ICA based on term work) and end semester examination (ESE). In addition to credit courses; appropriate significance is assigned to co-curricular and extra-curricular activities as audit points for all round development of students.

This curriculum of the First Year B. Tech has been framed on guidelines of NKC (National Knowledge Commission), which suggests appropriate importance of basic sciences, basic engineering, branch specific core, humanities, management, interdisciplinary and elective courses to fulfill the varied needs of the industry. It has been prepared to compete with the leading engineering institutions of the state and country.

Almost every course in the First Year B. Tech structure has undergone some modifications. The highlights of the present curriculum are listed as follows :

1. The Elements of Electrical and Electronics Engineering course (Theory and Practical) is divided into two courses, viz. (i) Basic Electrical Engineering and (ii) Basics Electronics Engineering.
2. Evaluation of all laboratory courses is 100% internal through continuous evaluation (Internal Continuous Assessment).
3. Introduction of elective shops like electrical shop, computer hardware shop, electronics shop and civil shop along with the conventional shops in the courses Workshop Practise - I and Workshop Practise – II are introduced.
4. To improve the communication skill and soft skills of the student General Proficiency is introduced at the first year level itself.
5. Non-credit course Environmental Studies of university pattern is assigned credits.
6. To improve the practical view of the students more lab hours and/or credits are assigned for Engineering Graphics Lab and Computer Science Lab courses.
7. Total number of courses offered to first year is 20 and the contact hours per week is 29.

GOVERNMENT COLLEGE OF ENGINEERING, Jalgaon.
Scheme for First Year B. Tech.
(Mechanical, Electronics & Telecommunication and Instrumentation Engineering)
SEM I

Course Code	Name of the Course	Group	TH Hrs /week	TUT Hrs/ week	PR Hrs/ week	Total	ISA	ISE1	ISE2	ESE	ICA	ESE	Total	Credit
			Teaching Scheme				**Theory**				**Practical**			
SH101	Engineering Mathematics-I	A	3	1	---	4	10	15	15	60	---	---	100	4
SH152	Applied Chemistry	A	4	---	---	4	10	15	15	60	---	---	100	4
ME151	Engineering Graphics	B	3	---	---	3	10	15	15	60	---	---	100	3
EE151	Basic Electrical Engineering	B	2		---	2	4	8	8	30	---	---	50	2
SH153	Environmental Studies	A	3	---	---	3	10	15	15	60	---	---	100	3
ME152	Workshop Practice-II	B	---	---	2	2	---	---	---	---	50	---	50	1
SH154	Applied Chemistry Lab	A	---	---	2	2	---	---	---	---	50	---	50	1
ME153	Engineering Graphics Lab	B	---	---	4	4	---	---	---	---	50	---	50	2
EE152	Basic Electrical Engineering Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
SH155	General Proficiency I	C	1		2	3	---	---	---	---	50	---	50	2
	Total		**16**	**1**	**12**	**29**	**44**	**68**	**68**	**270**	**250**	**0**	**700**	**23**

SEM II

Course Code	Name of the Course	Group	TH Hrs /week	TUT Hrs/ week	PR Hrs/ week	Total	ISA	ISE1	ISE2	ESE	ICA	ESE	Total	Credits
			Teaching Scheme				**Theory**				**Practical**			
SH151	Engineering Mathematics-II	A	3	1	---	4	10	15	15	60	---	---	100	4
SH102	Applied Physics	A	4	----	---	4	10	15	15	60	---	---	100	4
CO101	Computer Fundamentals and C Programming	B	3	---	---	3	10	15	15	60	---	---	100	3
CE101	Engineering Mechanics	B	3	1	---	4	10	15	15	60	---	---	100	4
ET101	Basic Electronics Engineering	B	2	---	---	2	4	8	8	30	---	---	50	2
ME101	Workshop Practice-I	B	---	---	2	2	---	---	---	---	50	---	50	1
SH103	Applied Physics Lab	A	---	---	2	2	---	---	---	---	50	---	50	1
CO102	Computer Fundamentals and C Programming Lab	B	---	---	4	4	---	---	---	---	50	---	50	2
CE102	Engineering Mechanics Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
ET102	Basic Electronics Engineering Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
	Total		**15**	**2**	**12**	**29**	**44**	**68**	**68**	**270**	**250**	**0**	**700**	**23**

TH: Theory Lecture,   **TUT: Tutorial,**   **PR: Practical**

• ISA: Internal Sessional Assessment should support the principle of continuous assessment and may be based on three / four different tools like surprise test, discussion, quiz, group home assignments, presentation skills, attendance etc

• ICA :Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding the principles of experimental set-up/experiment carried out.

• ISE :In Semester Examination; two ISE shall be conducted during the semester.

• ESE : End Semester Examination; it shall be conducted immediately after the semester is

GOVERNMENT COLLEGE OF ENGINEERING, Jalgaon.
Scheme for First Year B. Tech.
(Electrical, Computer and Civil Engineering)
SEM I

Course Code	Name of the Course	Group	TH Hrs /week	TUT Hrs/ week	PR Hrs/ week	Total	ISA	ISE1	ISE2	ESE	ICA	ESE	Total	Credit
			Teaching Scheme				Theory				Practical			
SH101	Engineering Mathematics-I	A	3	1	---	4	10	15	15	60	---	---	100	4
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ET101	Basic Electronics Engineering	B	2	---	---	2	4	8	8	30	---	---	50	2
ME101	Workshop Practice-I	B	---	---	2	2	---	---	---	---	50	---	50	1
SH103	Applied Physics Lab	A	---	---	2	2	---	---	---	---	50	---	50	1
CO102	Computer Fundamentals and C Programming Lab	B	---	---	4	4	---	---	---	---	50	---	50	2
CE102	Engineering Mechanics Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
ET102	Basic Electronics Engineering Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
	Total		15	2	12	29	44	68	68	270	250	0	700	23

SEM II

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			Teaching Scheme				Theory				Practical			
SH151	Engineering Mathematics-II	A	3	1	---	4	10	15	15	60	---	---	100	4
SH152	Applied Chemistry	A	4	---	---	4	10	15	15	60	---	---	100	4
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SH154	Applied Chemistry Lab	A	---	---	2	2	---	---	---	---	50	---	50	1
ME153	Engineering Graphics Lab	B	---	---	4	4	---	---	---	---	50	---	50	2
EE152	Basic Electrical Engineering Lab	B	---	---	2	2	---	---	---	---	50	---	50	1
SH155	General Proficiency I	C	1	----	2	3	---	---	---	---	50	---	50	2
	Total		16	1	12	29	44	68	68	270	250	0	700	23

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SH101 ENGINEERING MATHEMATICS - I

Teaching Scheme : 03L+ 01T Total: 04   **Credit:** 04
Evaluation Scheme: 15 ISE1 +15 ISE2 + 10 ISA + 60 ESE   **Total Marks:** 100
Duration of ESE : 03Hrs

Complex Numbers and Its Application:
      Complex number's: definition and properties, Argand's diagram, De Moivre's theorem and its applications to find root's of an algebraic equations, hyperbolic and inverse hyperbolic function, logarithm of complex numbers, separation into real and imaginary parts.

Matrices:
      Rank of matrix, reduction to normal forms, linear system of equations, Eigen values and Eigen vector's, Caylay-Hamilton theorem, transformations: linear and orthogonal. Applications: translation and rotational matrix

Differential Calculus:
      Successive differentiation, Leibnitz's theorem, expansion, Taylor's and Maclaurin's series, expansion standard function's, indeterminate forms, L-hospital rule and its applications.

Partial Differentiation:
      Partial derivatives: definition and properties, direct differentiation, chain rule's, total differentiation, Euler's theorem for homogeneous functions, implicit function, change of independent variables, Laplace operator, Jacobins: definition, properties and applications, maxima and minima for a function of two variables, Lagrange's method of undetermined multiplier's, applications to errors and approximations.

Solid Geometry:
      Cartesian, spherical and cylindrical co-ordinate system, sphere, cone and cylinder.

Text books:
1. A text book of Engineering Mathematics (Vol-I and II) by P.N.Wartikar and J.N. Wartikar, 2nd edition, Pune Vidhyarthi Griha Prakashan, Pune 1996.
2. A text book of Engineering Mathematics, by N.P.Bali & Manish Goyal, 9th Edition, Laxmi Prakashan, 2014.

Reference Books:
1. Higher Engineering Mathematics by B.S.Grewal , 33rd edition, Khanna Publication, New Delhi,1996.
2. Advanced Engineering Mathematics by H.K.Dass, 12th edition, S. Chand Publication, New Delhi, 2003.
3. Advanced Engineering Mathematics by Erwin Kreyszing, 8th edition, Willey Eastern Ltd.Mumbai,2013.
4. Higher Engineering Mathematics by B.V.Ramana, 12th edition, Tata McGraw Hill, Delhi, 2011

SH102 APPLIED PHYSICS

Teaching Scheme : 04L + 00T **Credit :** 04
 Evaluation Scheme : 15 ISE1 + 15 ISE2 + 10 ISA+ 60 ESE **Total marks :** 100
Duration of ESE :03Hrs

Physics of Semiconductors:
Band theory of solids- band structure of Sodium, Silicon, lithium and Diamond; Fermi level in intrinsic semiconductor (quantitative) and in extrinsic semiconductor (qualitative), semiconductor conductivity, Formation of PN junction on the basis of energy band diagrams, Hall effect.

Optics:
Interference: Concept of thin film and application of interference, Newton's rings, application of interference in determination of wavelength and refractive index, testing of optical flatness of surface, antireflection coating.

Diffraction: Fraunhofer and Fresnel, Fraunhofer Diffraction at single slit, diffraction grating, Resolving Power of grating and telescope.

Polarization-Polarization, Polarization by reflection, Brewster's law, law of Malus, Nicol Prism, Polaroid's, Engineering application of polarization.

Superconductors and magnetic materials:
Introduction to superconductivity, critical temperature and magnetic field, Meissner effect, types of superconductors, Applications of superconductivity. Magnetic materials– types and properties, theory of magnetism, hysteresis, hard and soft magnetic materials, applications.

Quantum Physics:
De-Broglie Hypothesis, Heisenberg's uncertainty principle (its experimental illustration), wave function, Schrödinger wave equations, motion of a particle in one-dimensional potential well, Harmonic Oscillator.

LASER & Optical Fiber :
Interaction of radiation with matter: absorption, spontaneous and stimulated emission, metastable state, population inversion, pumping mechanism, optical resonator, LASER beam characteristics, He Ne gas LASER, Nd- YAG Laser, Industrial applications of LASER. Holography.

Introduction to optical fiber, propagation of light through a cladded fiber, types of optical fiber, fiber materials, optical fiber communication system.

Modern Physics:
Motion of charged particle in electric and magnetic field and combined field, Electron microscope, Block diagram, Principle and working of Cathode ray oscilloscope, CRO Applications, Brainbridge Mass Spectrograph.

Acoustic and Ultrasonic :
Loudness – Decibel – Reverberation time – Sabine's formula – Factors affecting acoustics of building, reverberation time, Loudness Echo
Ultrasonic: Properties of ultrasonic waves – Ultrasonic production – Magnetostriction method – Piezoelectric method , Applications.

Introduction to nanotechnology:
Introduction of Nano technology, Properties of Nano particles (Optical, electrical,magnetic,structural, Mechanical), Brief description of different methods of synthesis of nano materials (Physical and Chemical methods), Classification of Nano materials, Fabrication Process-Top-down and Bottom up Approach. Applications of nanotechnology, Advantages & Limitations of Nano-materials.

Text books:
1. Fundamentals of Physics by D Halliday, R Resnik and J Walker, 6th Edition, John Wiley & Sons Inc., 2005.
2. Text Book of Engineering Physics by M. Avadhanulu and Kshirsagar, 9th Edition, S. Chand publication, 2011

3. Gaur R.K. and Gupta S.L., "Engineering Physics", Dhanpat Rai Publishers, New Delhi, 2001.

Reference Books:
1. Fundamentals of Optics, F A Jenkins & H E White, 4th Edition, Mc-Graw Hill Publications, 2001.
2. Concepts in Modern Physics, A Beiser, 5th Edition, Tata Mcgraw Hill Publication, 2001.
3. Introduction to Modern Physics by F K Richtmyer, E H Kennard and J N Cooper, 6th Edition, Tata Mcgraw Hill Publication, 1997.
4. Introduction to Solid State Physics, C Kittel, 7th Edition, J Wiley & Sons. Inc., 2005.
5. S K Kulkarni, "Nanotechnology, principles & Practices", Capital Publication Co. New Delhi, 2007

CO101 COMPUTER FUNDAMENTALS AND 'C' PROGRAMMING

Teaching Scheme : 03L + 00T, Total: 03	**Credit :** 03
Evaluation Scheme : 15 ISE1 + 15 ISE2 + 10 ISA + 60 ESE	**Total marks :** 100
Duration of ESE : 3Hrs	

Computer Fundamentals: Generations of Computer, classification of computers, architecture of computer system, computer hardware, memory hierarchy, types of software, Algorithms, flowcharts, types of programming languages. programming language tools.

Introduction to 'C': History of C programming. Data types in C, type casting, and type conversion, constants, variables and data types.

Operators and Expressions: arithmetic operators, relational operators, logical operators, assignment operators ,increment and decrement operators, conditional operators, bitwise operators, operator precedence, writing simple C programs.

Data input and output: get char and put char, scan and print, gets and puts functions.
Control Statements: while, do-while, for statement, nested loops if-else, switch, break, continue and go to statements.

Functions: Introduction to functions, defining and declaring a function, accessing a function, passing arguments to function, specifying argument data types, function prototypes, recursion.
Structures: Introduction to structures, defining a structure, processing a structure, user defined data types(type def),passing structures to a function.

Arrays: defining an array, processing an array, passing arrays to a function, multidimensional arrays.

Strings: Introduction to string, declaring and initializing string variables, string handling functions, string operations with and without string handling functions.

Pointers: declaration and initialization of pointer variables, Pointers and arrays, Pointers and character strings, Array of Pointers, Pointers to functions, Pointers and structures.

File Handling: defining and opening a file, closing a file, input/output operations on files

Text Books

1. Let Us C by Yashavant Kanetkar ,10th edition, BPB Publications, 2010.
2. Programming in ANSI C by E. Balagurusamy, 4th edition, Tata McGraw Hill, 2007.

Reference Books

1.Mastering C by K. R. Venugopal and S. R. Prasad, 1st edition, Tata McGraw Hill, 2011.

2. Programming in C by Stephen G Kochan , 3rd edition, , Pearson Education,2004.

3. Computer Programming by Ashok N Kamthane, 2nd edition, Pearson Education, 2008.

CE101 ENGINEERING MECHANICS

Teaching Scheme : 03L + 01T, Total:04   **Credit :** 04
 Evaluation Scheme : 15 ISE1 + 15 IES2 + 10 ISA + 60 ESE   **Total marks :** 100
Duration of ESE : 3Hrs

STATICS

Resultant of Coplanar Force System: -
Introduction, basic concept, principles of mechanics, force, types of force system, composition and resolution of forces, resolution of concurrent force system in plane, moment couple, Varignon's theorem, equivalent force system, resultant of non-concurrent force system in plane, introduction to space forces, resultant of concurrent forces in space.

Equilibrium of Force System:
Introduction, body constraints, type of supports & loads, free body diagram, conditions of equilibrium , equilibrium of two, three forces in plane, Lami's theorem, equilibrium of forces in plane, reaction of determinate beam (simple and compound beam), equilibrium of concurrent force system in space.Resultant and Equilibrium of concurrent and parallel forces in space.

Centre of Gravity: - Introduction, center of gravity/ centroid of composite plane figures and curves.

Moment of Inertia:- Introduction, radius of gyration, polar moment of inertia, moment of inertia of composite plane figures,

Friction: Introduction, laws of friction, simple contact friction, ladder friction, belt friction (flat) and block and wedge friction.

Analysis of Structure:- plane trusses, method of Joints , method of sections, cable subjected to point loads ,frames, plane frames, Principles of virtual work applied to statically determinate beams.

DYNAMICS

Kinematics of Rectilinear Motion of Particle:- Introduction, basic concept, equations of motion, variable acceleration, motion under gravity, motion curves, relative motion.

Kinetics of Rectilinear Motion of Particle:- Introduction, basic concept, Newton's second law, work energy principle. D alemberts principles, impulse momentum principle, direct central impact.

Rotational Motion of Rigid Bodies
Kinematics:- Introduction, Equation defining rotation of rigid bodies about a centroidal axis.
Kinetic:- Basic concept, Mass Moment of Inertia, Motion under a constant torque, Newton's second Law

Plane Motion of Rigid Bodies
Kinematics:- Introduction of general plane motion, Instantaneous center of rotation.
Kinetics:- Introduction, D'Alemberts principle, Work energy principle, Rolling Motion without
     slipping, Compound Pendulum

Kinematics Curvilinear Motion:- Basic concept, Equation of motion in Cartesian, Path and Polar
Coordinate, Motion of Projectiles

Kinetic Curvilinear Motion: Introduction of kinetics of curvilinear motions, Newton's second
law.

Text Books:
1. A Text Book of Engineering Mechanics, by R. S. Khurmi ,New edition,S.Chand Publication
   New Delhi 2013
2. Engineering Mechanics by S. Ramamrutham, New edition, Dhanpat Rai Publishing Co. Pvt
   Ltd. New Delhi 2013

Reference books:
1. Engineering Mechanics by S. S. Bhavikatti, Revised Edition, New Age International Pvt. Ltd
   New Delhi. 2013
2. A Text Book of Engineering Mechanics, by R. K. Bansal ,6th edition, Laxmi Publication New
   Delhi. 2013
3. Engineering Mechanics -Static and Dynamics by R.C. Hibbeler, 11th edition, McMillan
   Publication New Delhi 2014
4. Engineering Mechanics Jaget Babu, New edition, Pearson Publication, New Delhi 201

ET 101 BASIC ELECTRONICS ENGINEERING

Teaching Scheme : 02L+ 00T, Total: 02   **Credit:** 02
Evaluation Scheme: 8 ISE1+8 IES2+4 ISA+30 ESE   **Total Marks:** 50
Duration of ESE : 02Hrs

Semiconductor Devices:
p-n Junction Diode -Symbol, working and electrical characteristics of general purpose p-n junction
diode. Introduction to Zener diode, its symbol, working and V-I characteristics. Compare Zener
diode and general purpose p-n junction diode.
Transistor: Introduction basic concepts of transistor and its working. Transistor configurations (CB
, CE & CC), working and V-I characteristics. Compare CB , CE & CC configurations. Alpha, beta
and gamma and their relation, transistor specifications, transistor biasing – voltage divider bias,
switching transistors.

D C power Supplies and Operational Amplifier:
D C power Supplies: Concept of regulated, unregulated power supply, introduction to DC regulated
power supply with its block diagram, characteristics and parameters of regulated power supply.
rectifier: half, full and bridge wave rectifier, circuit configurations, operation and
comparison wrt rectifier parameters. Filter – necessity, types. Zener shunt and transistor series
regulator - circuit configuration and operation
Operational Amplifier: Introduction to op-amp, symbol, block diagram, parameters, ideal op amp,
inverting, non-inverting and differential configuration using ideal op amp.

Transducer and Electronic Instruments:

Transducer – Active and Passive transducer, working, specification, limitation and applications of RTD, thermistor, LVDT, potentiometer, strain gauge transducers.

Electronic Instruments: Introduction to analog voltmeter, ammeter, ohm meter and multi meter. Block diagram, operating principle and applications (voltage, current, resistance and frequency measurement) of CRO.

Digital Electronics:

Logic gates - AND, OR, NOT, NOR, NAND, X-OR, X- NOR gates,   Universal gates.

Boolean algebra - De-Morgan's theorem, Laws of Boolean algebra , Implementation of digital circuits from Boolean Expression using basic gate and universal gate.

Microprocessor-8085: Block schematic, working and pin configuration.

Text Books:
1. Principles of Electronics, Malvino, 5th edition, Tata McGraw Hill, 1993
2. Modern Digital Electronics, R.P. Jain, 3rd edition, Tata Mc-Graw Hill, 2005.
3. Electronic Instrumentation and Measurement Techniques, A. D. Helfrick and W.D. Cooper , Eastern Economy Edition, PHI Learning. Pvt. Ltd., New Delhi, 2008.

Reference Books
1. Basic Electronics, B.L.Theraja, 3rd edition, S.Chand & Company, 1987.
2. Op-amps and Linear Integrated Circuits, R. A. Gaykwad, 4th edition,Prentice Hall of India, 2008

ME101 WORKSHOP PRACTICE-I

Teaching Scheme: 02P Total: 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Practical/Jobs in shops A to C are mandatory and additional practical/jobs in any two shops from D to F shall be completed.

A) **Carpentry Shop :** Study of tools, equipment and operations of carpentry.One job involving lap and Bridle joint.

B) **Fitting Shop :** Study of tools, equipment and operations of fitting. One job on T-fitting.

C) **Tin Smithy :** Study of tools, equipment and operations of tin smithy. One job including riveting, soldering etc. e.g. letter box, dust bin, waste paper basket, funnel etc

D) **Foundry Shop :** Study of tools, equipment and operations of foundry. Preparation of mould.

E) **Electrical Workshop :** Introduction and difference between 1 φ ac, dc; transformers; repair and maintenance of domestic appliances like electric fan, tube light etc. MCB, ELCB; different types of wiring, demonstration on preparation of extension boards, tube light wiring etc; demonstration of earthling and neutral.

F) Computer Hardware Workshops : Introduction to personal computers (PC), PC main parts: CPU, input and output devices. Introduction of floppy & CD drives, HDD, CD, DVD, USB flash drives, and memory cards. Introduction of motherboard, I/O connectors. Installation of cards, devices and connecting cables, identification of cables of computers (connecting media).

Note: Students should maintain Workshop Diary and enter details of above practical.

Text Book:
1. Metrology and Quality Control, M.S. Mahajan, Dhanpat Rai and sons, Delhi. 2008 onwards

Reference Books:
1. Element of Workshop Technology, Hajara Chaudhary and Bose S K, Volume I and II, Asia Publishing House. 1997 onwards
2. Workshop Technology, W.A.J.Chapman CBS Publication. 1986 onwards
3. IBM PC AND CLONES: Hardware, Troubleshooting and Maintenance by B. Govindarajalu, 1st edition, Tata McGraw-Hill Education, 2002.

Guide lines for ICA:

Internal Continuous Assessment should support for regular performance of practical/jobs and its regular assessment with proper understanding principles of practical/jobs completed.

SH 103 APPLIED PHYSICS LAB

Teaching Scheme   : 02P **Total:** 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks :** 50

It is a representative list of practicals. The instructor may choose experiments as per his requirements (so as to cover entire contents of the course) from the list or otherwise.
Minimum eight experiments should be performed to cover entire curriculum of course SH102.
Thelist given below is just a guideline..

List of experiments:
1. Determination of energy gap in semiconductor.
2. Determination of specific charge of an electron (e/m) by Thomson method
3. Study of CRO, Measurement of voltage and frequency by using cathode ray oscilloscope.
4. Determination of wavelength by using diffraction grating.
5. Determination of wavelength of light by using Newton's rings.
6. B-H curve: To draw the B-H curve for the ferromagnetic material and to calculate the hysteresis loss and relative permeability.
7. Study of Sound Level Meter
8. Determine velocity of ultrasonic wave in water using Ultrasonic Interferometer
9. Synthesis of nano particles and their characterization.
10. To determine forward and reversed characteristics of given semiconductor diode.
11. To determine wavelength of He-Ne Laser using diffraction grating.
12. Study of Hall Effect in semiconductors.
13. Study the characteristics of solar cell.
14. Study of I-V and band gap of p-n junction diode.
15. Study law of Malus.

Guide lines for ICA:
Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

CO102 COMPUTER FUNDAMENTALS AND 'C' PROGRAMMING LAB

Teaching Scheme: 04P Total: 04   **Credit :** 02
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Minimum eight experiments from each Group A and Group B shall be performed to cover entire curriculum of course CO101. The list given below is just a guideline.

GROUP A
1. Program for basic arithmetic operations and expressions: Performing simple arithmetic operations like Addition, Subtraction, Multiplication, Division.
2. Program for finding roots of a quadratic equation, square root of a number: Finding roots of any quadratic equation and square root of any given number.
3. Find area and volume of geometric objects: Calculate area and volume of geometric objects (circle, square, triangle etc.)
4. Finding greatest and smallest of 2 or 3 numbers: To find smallest and largest numbers from given 2 or 3 numbers.
5. Generating odd / even numbers: To generate odd and even numbers.
6. Finding factorial of a number: Calculate the factorial of any given number.
7. Checking / generating prime numbers : Generate the prime numbers.
8. Checking for Armstrong numbers: Generate the Armstrong numbers.
9. Checking a number for palindrome: Check the given number for palindrome.
10. Finding GCD of two numbers: Calculate GCD of any two numbers.
11. Generating sine /cosine series/value: Generate the sine/cosine series.
12. Solving a linear equation: To solve the linear equation.
13. Printing a number in words: Print any given number in words.
14. Greatest / smallest/ sum /average of 'n' numbers: Find the greatest/smallest/sum/average of any given n numbers.

GROUP B
1. Integer to binary / hex and octal conversion: To convert integer to binary, hex and octal.
2. Greatest / smallest/ sum /average of 'n' numbers: To find the greatest/smallest/sum/average of given n numbers using arrays.
3. Linear / binary search : To search a number from given n numbers using linear and binary search.
4. Permutation and combination generation: Calculate the permutation and combination.
5. String processing / operations: Performing string operations using arrays.
6. Sorting of numbers and Strings: Sorting any string and numbers ascending and descending order using arrays.
7. Matrix operations: Performing matrix operation (addition, subtraction, multiplication etc.) using arrays.
8. Record processing using structure: Processing student record using structures.
9.   Program to swap two numbers using Call by Reference: Swapping of two numbers using call by reference
10. Program to calculate following:

11. Program to print Pascal triangle
12. Simple program for FILES: Read and write operations

Guide lines for ICA:
Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

CE102 ENGINEERING MECHANICS LAB

Teaching Scheme: 02P Total: 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Minimum eight experiments shall be performed to cover entire curriculum of course CE101. The list given below is just a guideline.

List of Experiments

1. Reaction of Beam
2. Flat belt Friction
3. Forces in plane truss(jib crane).
4. Study of Simple machines and verification of Law of Machine. (any one)
5. Moment of Inertia of Fly Wheel
6. Compound Pendulum
7. Torsional Pendulum
8. Demonstration of concept of the following
   a) Impact of elastic bodies and coefficient of restitution
   b) Rolling of various bodies
9. Study of space force.
10. Graphical work :
    a) Graphics : (Minimum 2) problems of graphical solution of Static's problem.
    b) Graphic Dynamics: (Minimum 2) Problems on Graphical solution of Dynamic problem.

Guide lines for ICA:
Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

ET 101 BASIC ELECTRONICS ENGINEERING LAB

Teaching Scheme : 02P Total: 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Minimum eight experiments shall be performed to cover entire curriculum of course ET101. The list given below is just a guideline.

List of Experiments

1. To plot V-I characteristics of p-n junction diode (Ge andSi) and compute their junction potential. To study p-n junction diode as a switch.
2. To plot V-I characteristics of Zener diode and compute its junction potential and breakdown voltage.
3. To plot and study I/P and O/P characteristics of BJT in CB and CE configurations.
4. To study performance characteristics of a transistor as a switch.
5. To implement Half wave, Centre tap Full wave and Bridge rectifiers.
6. To implement the Capacitance input filter and plot its output waveform.
7. To plot and study the characteristics of a Zener diode as Voltage Regulator.
8. To measure the gain of Inverting and Non-Inverting Amplifier using Op-Amp 741

9. To measure temperature using RTD/thermistor
10. To study and use multi meter for voltage, current and resistance measurement.
11. To study front panel of CRO.
12. To use CRO for voltage, current and frequency measurement.
13. Truth table verification of logic gates.
14. To implement logic circuit from Boolean expression.

Guidelines for ICA:

Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

SH151 ENGINEERING MATHEMATICS - II

Teaching Scheme: 03L+ 01T Total: 04   **Credit:** 04
 Evaluation Scheme: 15 ISE1 +15 ISE2 + 10 ISA + 60 ESE   **Total Marks:** 100
Duration of ESE: 03Hrs

Ordinary Differential Equation and Its Application
        Definition, classification, solution of differential equation. homogeneous and non homogeneous differential equation, exact differential equation, linear differential equation, equation reducible to linear, application to orthogonal trajectories, mechanics, electrical circuits, one dimensional conduction of heat.

Integral Calculus
        Reduction formulae, gamma function, beta function, differentiation under integral sign, Error functions.

Curve Tracing and Rectification
        Tracing of cartesian curves, polar curves, parametric equations, rectification.

Multiple Integrals

        Double integral, evaluation of double integral by polar co-ordinate, change of order of integration, triple integral, use of spherical and cylindrical co-ordinate, application to surface area and volume of solid revolution, mean and RMS values.

Fourier Series
        Dirichlet's conditions, expansion of a function as Fourier series, Fourier series expansion of a even and odd function, change of interval, half range Fourier series expansion, application to harmonic analysis.

Text books:

1. A text book of Engineering Mathematics (Vol-I and II) by P.N.Wartikar and J.N. Wartikar, 2nd edition, Pune Vidhyarthi Griha Prakashan, Pune 1996.
2. A text book of Engineering Mathematics, by N.P.Bali & Manish Goyal, 9th edition, Laxmi Prakashan, 2014.

Reference Books:
1. Higher Engineering Mathematics by B.S.Grewal , 33rd edition, Khanna Publication, New Delhi,1996.
2. Advanced Engineering Mathematics by H.K.Dass, 12th edition, S. Chand Publication, New Delhi, 2003.

3. Advanced Engineering Mathematics by Erwin Kreyszing, 8th edition, Willey Eastern Ltd.Mumbai,2013.
4. Higher Engineering Mathematics by B.V.Ramana, 12th edition, Tata McGraw Hill, Delhi, 2011.

SH152- APPLIED CHEMISTRY

Teaching Scheme : 04L +00T, Total: 04   **Credit:** 04
Evaluation Scheme: +15 ISE1+15 ISE2+10 ISA+ 60ESE   **Total marks:** 100
Duration of ESE : 3 Hrs

Water :-
Introduction-Definition of water, hard & soft water ,Types of hardness (Temporary & Permanente hardness) & Numerical, Units of hardness ,Impurities in water & their effects, Softening of water-principals, reactions, advantages and limitations of lime soda process, Zeolite process, Ion exchange process. Drinking water or municipal water treatment- removal of Micro organisms by adding Bleaching powder, chlorination, Disinfection by ozone, Reverse osmosis.

Fuels and Combustion: -
Introduction- Classification, characteristics of good fuel, Calorific value- Types& units. Determination of calorific value by Bomb & Boy's calorimeter & Numerical, analysis of coal with significance, Petroleum products – Fraction distillation of petroleum, petroleum cracking, octane number, cetane number & antiknocking agents, Preparation properties and uses of – petrol, diesel, kerosene & LPG.

Engineering materials: -
Cement – Introduction-Classification, Raw materials for manufacture of cement, Manufacture of Portland cement Dry and Wet process, Chemical Composition of cement, Setting and Hardening of cement.
*Polymer chemistry-*Monomers, Polymers, Copolymers, Polymerizations, classification of Polymers Chemistry Properties and applications of Polymers (PVC, PE, PP Polystrene, PTFE, Epoxy, Teflon PVA, Polycarbonate)

Lubricants & Corrosion: -
Lubricants- Introduction - Mechanism of Lubrication, classification of lubricants solid, liquid & semisolid, Physical and chemical properties of lubricants and its significance- Viscosity, viscosity Index, flash and fire points, cloud and pour points, oiliness & Acid value saponification value.

Corrosion- Introduction causes & consequences of corrosion, Corrosion prevention- cathodic & anodic protection, design & material selection, and protective surface coating- hot Dipping, cladding, electro plating, powder coating.

Environmental chemistry: –
Introduction-definition, Pollutants & types, air-pollution, Water-pollution, Soil pollution, Noise pollution-causes, consequences & prevention, Radioactive pollution-waste Pollution,Tharmal Pollution-causes, Chemical and Biological effect & prevention, Greenhouse effects, ozone layer depletion, Oil Pollution and Marine ecology. Industrial hazardous waste and management, Industrial safety (Intrinsic and extrinsic)

Green Chemistry-Basic Principle of Green Technology, significance, Concept of atom economy and carbon trading, Waste minimization and climate change Applications-Biomass, biofuel production, Agricultural related practices.

Text Books:-

1. A text Book of Engineering Chemistry by Dara S.S. 10th edition, S Chand Publication, 2003
2. Text Book of Engineering Chemistry by P.C. Jain, 5th edition, Dhanpat Rai and Sons, 2009
3. Textbook of Engineering Chemistry by Dr. Sunita Rattan 1st edition, S.K. Katarina and Sons, 2012
4. Textbook of Engineering Chemistry by B.S. Chauhan, 3rd edition, University Science Press,2009.

References Books:-
1. Basic Inorganic Chemistry by Cotton & Wilkinson,4th edition, John Wiley Publication 2011,
2. Environmental Chemistry by B.K. Sharma,5th edition, Goel Publishing House, 2009

ME151- ENGINEERING GRAPHICS

Teaching Scheme : 03L +00T, Total: 03   **Credit:** 03
Evaluation Scheme: 15 ISE1+15 ISE2+10 ISA+ 60ESE   **Total marks:** 100
Duration of ESE : 3 Hrs

Engineering Curves:
Introduction, Conic section, *Ellipse* by Focus-Directrix method, concentric circle method and oblong method, *Parabola* by Focus-Directrix method, Arc of circle method and rectangle method, *Hyperbola* by Focus-Directrix method, arc of circle method and asymptote method
Cycloid- cycloid**,** epicycloid and hypocycloid**,** *Involutes-* involutes of circle and involutes of polygon

Orthographic Projections
 Types of lines, methods of dimensioning and types of dimensioning, orthographic projections (First and third angle orthographic projection methods) of different machine parts problem, all types sectional orthographic projections (First and third angle orthographic projection methods). Sectional view problem

Isometric view
Isometric Views: Introduction to pictorial views, isometric scale, isometric projections and different machine parts isometric views problems, Oblique view.

Projections of Lines
Projections of Straight Lines: Projections of points in four quadrants, projections of points in reference plane, line parallel to both the plane, line parallel to one plane and perpendicular to the other, line inclined to one plane and parallel to the other, line inclined to both the reference planes (all four quadrants should be considered).

Projections of Planes
Projections of planes: Plane with surface parallel to one plane and perpendicular to other, plane inclined to one plane and perpendicular to other, projections of planes inclined to both the plane (problems on AIP & AVP).

Projections of Solids

Projections of Solids: Introduction to solids: prisms, pyramid, cylinder, cone, cube, tetrahedron, sphere, projections of above solids with axis inclined to one plane, projections of above solids with axis inclined to both the planes, projection of composite solids (different arrangement of spheres with above solids).

Development of Lateral surfaces
Development of lateral surfaces of all types of prisms, pyramids, cones and cylinders (parallel and radial method)

Text Books:
1. Engineering Graphics with an introduction to computer aided drafting , vol. I & II, H. G. Phakatkar, Nirali Prakashan, Pune. Feb 2007 onwards.
2. A Text book of Engineering Drawing, P.J. Shah, S. Chand & company Ltd., New Delhi. 2009 3 Engineering Drawing, R. V. Mali & Chaudhari, Vrinda Publication, Jalgaon 1998 onwards

Reference Books:
1. Engineering Drawing, Bhatt N. D., Panchal V. M., Charotar Publishing House 2008 onwards
2. Engineering Graphics, Vol.-I and Vol.-II, Dhabhade M. L., Vision Publications 2003 onwards
3. Engineering drawing – P.S Gill, S. K. Kataria publication.2012 onwards

EE151- BASIC ELECTRICAL ENGINEERING

Teaching Scheme – 02L +00T, Total: 02   **Credit:** 02
Evaluation Scheme: 8 ISE1+ 8 ISE2+ 4 ISA+ 30 ESE   **Total marks: 5**0
Duration of ESE: 2 Hrs

D.C. Circuits: Basic electrical quantities, electrical energy and power. Introduction to resistance, inductance and capacitance. Types of sources, Ohm's law-fundamental circuit laws: KCL and KVL. DC circuits and network simplification (series, parallel, star/delta), Mesh and Nodal analysis. Superposition theorem, Thevenin's and Norton's theorem, Step response of R-L, R-C circuits.

A.C. Fundamentals: Generation of alternating voltage, sinusoidal voltage and currents, different terminologies associated with AC circuit. Behavior of AC circuit containing pure R, L, and C. Phase representation in rectangular, polar and exponential forms, impedance and admittance concept, power in single phase circuit. Concepts of active, reactive and apparent power, power factor,power in non-sinusoidal circuits.

A.C. Circuit Analysis: Series RL, RC and RLC circuits-application of complex notation, series-parallel circuits. Time and frequency response of AC circuits. Series/parallel resonance. Three phase voltage, current and power. Star connected and delta connected balanced circuits-delta/Star equivalence-analysis of balanced three phase circuits, power measurement in three phase circuit.

Magnetic Circuits: Magnetic circuits' concepts, BH curves-characteristics of magnetic materials, practical magnetic circuits with dc excitation, magnetically induced voltages-self inductance, magnetic circuits with ac excitation, hysteresis and eddy current losses.

Transformer: Single-phase transformer construction, working of ideal transformer, equivalent circuit and determination of parameters, efficiency and regulation. Behavior of practical transformer on loaded condition.

Electrical Machines and Measurements: Types of electric machines, construction, characteristics and applications. Electrical instruments such as wattmeter, en er gy meter, tong tester, megger and power analyzer. Switches, Main Switches, Sockets, Switch boards, Wall socket, Fuse units, Lamp Holders, Ceiling rose ,Distribution boxes, Miniature Circuit Breaker, Earth Leakage Circuit Breaker, Ceiling fan, Electronic fan regulator, Storage type Water Heater, Immersion Heater, Wires and Cables (PVC, VIR, Weather Proof), UG Cable (LT and HT), Copper conductor sizes and rating, Earth wires.

Lamps: Incandescent lamp, fluorescent lamp, Sodium vapour lamp, High Pressure Mercury Vapour lamp, Halogen lamp ,Neon tube/lamp, Electronic Choke for fluorescent Tube, Compact Fluorescent Lamp, LED lights, Earthing and Lightning protection.

Text B o o k s :-

1. Fundamentals of Electrical Engineering, B. L. Theraja,27 th edition, S Chand Publishers, 1996

Reference Books:-

1. Basic Electrical Engineering, A.E. Fitzgerald and D.E. Higginbotham, 5 ^{t h} e dition, Tata Mc Graw Hill publication, 2009.
2. Electrical Wiring, Estimating and Costing, Dr.S.L.Uppal, 7 th edition, Khanna Publishers, 1970.
3. Fundamentals of Electrical Engineering, Leonard S. Bobrow, 2nd Edition, Oxford Press, 1998.
4. Fundamentals of Electrical Engineering, B. L. Theraja,27 th edition, S Chand Publishers,1996.

SH153 ENVIRONMENTAL STUDIES

Teaching Scheme : 03L, 00T, Total :03   **Credit :** 03
Evaluation Scheme: 15 ISE1 + 15 ISE2 +10 ISA + 60 ESE   **Total Marks:** 100
Duration of ESE : 3.00Hrs.

The Multidisciplinary Nature of Environmental Studies – Definition, scope and importance, need of public awareness.

Natural Resources – Conventional Energy Resources: Definition, Classification, Composition, Energy Content types: Coal, Petroleum, Natural Gases, Hydro geothermal, Nuclear. Environmental Implication of Energy uses. Non-conventional Energy Resources: Solar Energy , Wind Energy, Tidal energy, Geothermal Energy, Hydropower and Biogas.

Ecosystems – Concept of ecosystem. Structure and function of ecosystem. Producer, consumer, decomposers. Energy flow in the ecosystem. Ecological succession. Food chain, food web and ecological pyramids. Introduction, types, characteristic features, structure and function of following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystem (pond/lake, rivers, oceans)

Bio-diversity and its conservation – Introduction – Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. India as mega-diversity nation. Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity- In-situ and Ex-situ conservation of Biodiversity

Environmental Pollution – Definition, Pollution (air, water, soil, marine, noise), solid waste management, e-waste management, pollution case studies, disaster management. Thermal Pollution- Definition, sources, Effects and control measures, Environmental Biotechnology-

Definition, types-(Bioremediation and Biofiltration), remote sensing- definition, types and its Applications.

Social issues and the Environment – Water conservation, rain water harvesting, watershed management, Environmental ethics, Climate change, green technology, global warming, acid rain, ozone layer depletion, Environment Protection Acts(Air, Water and land), Air (prevention and control of pollution) Acts, Water (prevention and control of pollution) Acts, Wildlife Protection Acts, Forest Conservation Acts.

Human Population and Environment – Environment and human health, Human rights, Role of Information Technology in Environment and human health, Public awareness.

Field Work – Visit to a local area to document environmental assets – River, forest grassland / hill / mountain. Visit to local polluted site. Study of common plants, insects, birds. Study of simple ecosystems – pond, river, hill slope etc.

Text Books:
1. The Biodiversity of India, Bharucha Erach, 2nd edition ,Mapin Publishing Pvt. Ltd., Ahmedabad, 2014.
2. A.K. De, Environmental Chemistry, 3rd Ed., New Age International Publishers (P) Ltd., New Delhi (2005)

   Reference Books:
1. Hazardous Waste Incineration by Brunner R.C, 2nd edition , McGraw Hill Inc,1993.
2. Marine pollution by Clark R.S., 5th edition, Clanderson Press Oxford (TB), 2009.
3. Environmental Chemistry by Sharma B.K., 3rd edition, Goel Publishing House, Merat, 2001.
4. Environmental Management by Wagner K.D. and W.B. Saunders Co., 4th edition Philadelphia, USA, 1998,
5. Environmental Studies by Benny Joseph, 1st edition, Tata Mcgraw-Hill Publication, 2005.

ME152 WORKSHOP PRACTICE-II

Teaching Scheme: 02PR Total: 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Practical/Jobs in shops A to C are mandatory and additional practical in any two shops from D to F shall be completed.

A) Plumbing Shop: Study of tools, equipment and operations of Plumbing. One job involving different joints and side threading.

B) Welding Shop: Study of tools, equipments and operations of Welding. One job on Arc Welding-Lap/Straight.

C) Black Smithy: Study of tools, equipments and operations of Black Smithy. Demonstration of Black smithy work.

D) Machine Shop: Study of different machine tools like Lathe, Shaping, Milling and Drilling.

E) Electronics Workshop: Types of PCB, PCB making, soldering, testing of electronic component like Diode, transistor, R.L.C. etc and de-soldering of a simple electronic circuit; probe Making; Use of multi-meter (each function).

F) Civil Workshop: Types of brick bonds (any three bonds)

Note: Students should maintain Workshop Diary and enter details of above practical

Text Book:
1. Metrology and Quality Control M.S. Mahajan, Dhanpat Rai and Sons, Delhi. 2008 onwards.

Reference Books:
1. Element of Workshop Technology Volume I and II, Hajara Chaudhary and Bose S. K., Asia Publishing House, 1997 onwards
2. Workshop Technology, Chapman W. A. J., CBS Publication. 1986 onwards
3. Building and Construction,B. C. Punmi , Laxmi Publications, India 1990 onwards
4. Electronic Materials and Components, by Madhuri Joshi Shroff Publication ,1997 onwards

Guide lines for ICA:

Internal Continuous Assessment should support for regular performance of practical/jobs and its regular assessment with proper understanding principles of practical/jobs completed.

SH154 APPLIED CHEMISTRY LAB

Teaching Scheme: 02PR, Total: 02   **Credit :** 01
Evaluation Scheme: 50 ICA   **Total Marks:** 50

Minimum eight experiments shall be performed to cover entire curriculum of course SH152. The list given below is just a guideline.

List of experiments:-

1) Determination of percentage of calcium in cement
2) Estimation of (Cu) Copper from brass iodometricall
3) Determination of hardness of H2o by complex metric method using EDTA.
4) To Determine the Viscosity of given Edible oil by using Ostwald's Viscometer.
5) Preparation of Phenol Formaldehyde resin.
6) To determine Moisture, Volatile matter and Fixed Carbon of given coal sample
7) To determine acid value of lubricant oil.
8) To determine iodine value of polymer
9) To determine (Cao) from given sample of cement by volumetric Method
10) Estimation of calcium in limestone or dolomite
11) To determine percentage of copper in brass sample.
12) Determination of chemical oxygen demand (COD) in waste water sample.
13) To detect fuel adulteration in transport fuels
14) Determination of total hardness of water.
15) Preparation of Urea Formaldehyde resin.
16) Determination of dissociation constant of weak acid (acetic acid) using PH meter.
17) Determination of the percentage of Nitrogen in the given coal sample.
18)To determine hydroxyl value of a polymer.

19) Determine the molecular weight of polymer by viscosity measurement.

20) Determination of PH in given solution.

Guide lines for ICA:

Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

ME153 ENGINEERING GRAPHICS LAB

Teaching Scheme: 04PR Total: 04 **Credit :** 02
Evaluation Scheme: 50 ICA **Total Marks:** 50

All following sheets are mandatory.

1. One drawing sheet on Engineering curves
2. One drawing sheet on orthographic projections
3. One drawing sheet on isometric projections
4. One drawing sheet on projections of lines
5. One drawing sheet on projections of planes
6. One drawing sheet on projections solids
7. One drawing sheet on development of surfaces.

Guide lines for ICA:

Internal Continuous Assessment should support for regular performance of practical/sheets and its regular assessment with proper understanding principles of practical/ sheets completed.

EE152 BASIC ELECTRICAL ENGINEERING L AB

Teaching Scheme: 04PR Total: 04 **Credit :** 01
Evaluation Scheme: 50 ICA **Total Marks:** 50

Minimum eight experiments shall be performed to cover entire curriculum of course EE151. The list given below is just a guideline.

List of Experiments:

1. Verification of KVL and KCL .verification of current and voltage division.
2. Effect of temperature on resistance.
3. Norton and Thevinin's theorem.
4. Superposition theorem.
5. Study of first order R-C circuit.
6. Study of R-L-C circuit.
7. Three phase balanced star/delta circuits.
8. B-H curve.
9. Percentage efficiency and regulation of single phase transformer or oc/sc test
10. Wiring schemes, fuses, earthing etc.

Guide lines for ICA:

Internal Continuous Assessment should support for regular performance of practical and its regular assessment with proper understanding principles of experimental set-up / experiment carried out.

SH 155 GENERAL PROFICIENCY–I

Teaching Scheme: 01L, 02PR Total: 03   **Credit :** 02

Evaluation Scheme: 50 ICA   **Total Marks:** 50

Communication skill:

- Meaning, process of communication, importance.
- Types of verbal, non-verbal, written-oral, formal interview.
- Meaning of communications, Barriers and measures to overcome the barriers to communication.
- Principal of effective communication.
- Listening comprehension, rapid reading and intensive reading skill, oral skill with emphasis on conversational practice, vocabulary development.
- Writing skills through paragraphs and simple essays. Guided and free composition essays of expository, descriptive, narrative, argumentative and reflective types.
- Presentation Skills – Types of presentation, prepositions about presentations, types of delivery, process of preplanning and deliverying.

Personality skill:

- Interpersonal relation, interpersonal conflict, role identity, role perception, role expectation, role conflict.
- Definition of personality, personality types, determination of personality- biological, psychological and socio culture factor need for personality development, self analysis through SWOT analysis and Johari window.
- Elements of motivation, seven rules of motivation, technique and strategies for self motivation, Mashlow's Hierarchy of need theory, X and Y theory, goal setting.
- Positive thinking, goals and techniques for positive thinking, enhancement of concentration through positive thinking, practicing a positive life style.
- Nurturing creativity, decision making, and problem solving, thinking power – seven steps for dealing with doubt.

Professional ethics-
- Moral values- norms and beliefs, character, commitment, conviction, devotion, social and professional behaviour and responsibilities.

Topics for assignments/practical:
Minimum eight experiments shall be performed to cover entire curriculum of course. The list given below is just a guideline.

1. Role Playing
2. Identifying self personality
3. Reading a poem or short story.

4. Telling a story
5. Writing report on audio speech based on the topics of personality skills.
6. Delivering a seminar or speech on the topics of personality skills.
7. Observation of recorded seminar or speech delivered by student and suggestions for improvement.
8. Summarizing a chapter from current popular story book / Book review.
9. Role playing through dialogues.
10.SWOT analysis.
11. Personality test on decision making, thinking power etc.
12. Computer based power point presentation.

Text Books:

1. Learners English grammar and composition, N. D. V. Prasad, A Rao, 2nd edition S.
Chand and Company, New Delhi, 2008
2. Technical Communication Principle and Practices, Meenakshi Raman, Sangeeta
Sharama, 4th edition, Oxford University press, 2007
3. Organisation Behaviour – Stephen Robbins – Pearson
4. Organisation Behaviour – Margic Parikh – TMH
5. Business communication – Raman and Singh – Oxford.

Reference Books:

1. Professional Communication Skills, Alok Jain, Pravin S., R. Bhatia, A. M. Sheikh, 3rd edition, S.
Chand and Company, New Delhi, 2005
2. Effective English Communication, Krishna Mohan, Meenakshi Raman, 3rd edition, Tata
McGraw Hill, New Delhi, 2003
3. Power of Positive Thinking, D. J. Mile, 2nd edition, Rohan Book Company,Delhi, 2004
4. All About Self motivation, Pravesh Kumar, 3rd edition Goodwill Publishing House, New
Delhi, 2005
5. Personality Development, E. B. Hurlock, 5th edition Tata MacGraw Hill, New Delhi, 2006

Guide lines for ICA:
Internal Continuous Assessment should support for regular performance of practical and its regular
assessment with proper understanding principles of experimental set-up / experiment carried out.