IPS ACADEMY- INSTITUTE OF ENGINEERING & SCIENCE, INDORE

(An Autonomous Institute, Affiliated to RGPV, Bhopal)

Scheme of Examination as per AICTE Flexible Curricula

I Semester Bachelor of Technology (B.Tech.)

[Fire Technology & Safety Engineering]

S.No.	Course Type	Course Code	Course Title	Maximum Marks Allotted					Total Marks	Contact Hours Per week			Total Credits
				Theory			Practical						
				End Sem.	Mid Sem. Exam.	Quiz/ Assignment	End Semester	Term work / Lab Work & Sessional		L	T	P	
1	BSC	MA01	Linear Algebra	60	25	15	-	-	100	2	1	-	3
2	BSC	CH01	Applied Chemistry	60	25	15	-	-	100	3	-	-	3
3	ESC	ME02	Fundamentals of Mechanical Engineering	60	25	15	-	-	100	2	-	-	2
4	ESC	CE02	Engineering Mechanics	60	25	15	-	-	100	2	-	-	2
5	ESC	EE01	Basic Electrical Engineering	60	25	15	-	-	100	2	-	-	2
6	HSMC	HS02	Communicative English	60	25	15	-	-	100	2	-	-	2
7	BSC	CH01(P)	Applied Chemistry Lab	-	-	-	60	40	100	-	-	2	1
8	ESC	CE02(P)	Engineering Mechanics Lab	-	-	-	60	40	100	-	-	2	1
9	ESC	EE01(P)	Basic Electrical Engineering Lab	-	-	-	60	40	100	-	-	2	1
10	HSMC	HS02(P)	Language Lab	-	-	-	60	40	100	-	-	2	1
11	SBC	ME01(P)	Tech. Shop Lab	-	-	-	60	40	100	-	-	2	1
			Total	**360**	**150**	**90**	**300**	**200**	**1100**	**13**	**1**	**10**	**19**

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MA01	Linear Algebra	2L:1T:0P	3 Credits

Course Objective: Mathematics is the basic necessity for the foundation of engineering and technology. The main objective of this course is to teach mathematical methods, develop mathematical skills and increase students thinking power.

Module 1: Matrices **(8 Hrs)**

Definition, Elementary concepts of matrices, Types of matrices: Symmetric, Skew-symmetric and orthogonal matrices, Determinants, Elementary operations, Rank and nullity of a matrix, Echelon form, Normal form.

Module 2: Simultaneous Linear Equations **(8 Hrs)**

Solution of simultaneous linear equation and consistency of equations, Homogeneous and non-homogeneous system of linear equations, Augmented matrices, Elementary transformation methods: Gauss elimination, Gauss-Jordan elimination, Crout's triangularization method, Solution by Cramer's Rule.

Module 3: Eigen values and Eigen vectors **(8 Hrs)**

Definition and properties of Eigen values and Eigen vectors, Cayley-Hemilton theorem, Inverse of matrix by Cayley-Hemilton theorem, Diagonalization of a matrix.

Module 4: Set Theory **(8 Hrs**

Definition of sets, Types of set : Countable and uncountable sets, Power set, Operation on sets: Union, Intersection, Cartesian product, Venn diagrams, Ordered pairs, Relation, Equivalence relations, Function, Partially ordered sets, Supremum & I

Module 5: Vector Space **(8 Hrs)**

Introduction, General properties of vector spaces, Vector subspaces, Algebra of subspaces, Linear combination of vectors, Finite dimensional vector spaces, Linearly dependent and linearly independent vectors, Basis of a vector space.

Course Outcomes :

CO1: Recall and generalize basic concepts of matrices and apply to engineering problems.

CO2: Explain the concept of simultaneous linear equation and apply to engineering problems.

CO3: Explain and apply the basic concepts of eigen values and eigen vectors in engineering problems.

CO4: Explain and apply the fundamentals of set theory in engineering problems.

CO5: Explain and apply the basic concepts of vector space in engineering problems.

Textbooks/References:

1. Narayan & Mittal A textbook of Matrices, S Chand Publiahing , 9 th edition 1997.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 10th Edition, 2018.
3. Chandrika Prasad & Reena Garg, Advanced Engineering Mathematics, Khanna BookPublishing Co. (P) Ltd., Delhi, 2018.
4. T. Veerarajan, Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2017.
5. B. V. Ramanna, Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 2017.
6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2020.
7. David Poole, Linear Algebra: A Modern Introduction, 2014.
8. Seymour Lipschutz & Marc Lipson ,Schaum's outlines of Linear Algebra , McGraw-HillEducation (India) Private Limited, New Delhi, 5th edition, 2013.
9. Howard Anton and Chris Rorres ,Elementary Linear Algebra , John Wiley & sons, 10thedition, 2011.
10. S.S. Sastry, Advanced Engineering Mathematics, PHI, 4th Edition, 2009.
11. Serge Lang , Linear Algebra , Springer, 3rd edition, 2004.

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CH01	Applied Chemistry	3L:0T:0P	3 Credits

Course Objective: The objective of this course is to introduce the students with the concepts of Engineering Chemistry and its applications.

Module 1: Water Analysis & its Treatment (9 Hrs.)

Sources, Impurities, Hardness & its units, Determination of hardness by EDTA method, Alkalinity & its determination and related numerical. Boiler Problem & Softening Methods: Boiler troubles :- Sludge & scale, Priming & foaming, Boiler corrosion, Caustic embrittlement, Internal treatment methods of softening :- Calgon conditioning, Colloidal conditioning, Carbonate conditioning, Phosphate conditioning, External treatment methods of softening :- Lime-Soda method, Zeolite method and Ion exchange method and related numerical.

Module 2: Lubricants (9 Hrs.)

Concept of tribology, Function of lubricants, Classification of lubricants, :- Liquid, solid and semisolid lubricants, Mechanism of lubrication, Properties of lubricating oils:- Viscosity & viscosity- index and numerical, Flash & fire Point, Cloud & pour Point, Anilline point, Acid number, Saponification number, Steam emulsification number. Introduction, control & prevention of corrosion.

Module 3: Fuel & Carbonization (9 Hrs.)

Introduction & Classification of fuel, Calorific value; Gross calorific value and Net calorific value, Determination of calorific value by Bomb Calorimeter, Numerical by Dulong's Formula, Analysis of coal; Proximate analysis and Ultimate analysis, Introduction of carbonization, Manufacture of metallurgical coke by Otto Hoffman's byproduct oven.

Module 4: Polymerization (9 Hrs.)

Introduction & Classification of polymers, Mechanism of polymerization:- Free radical, Ionic polymerization, Elementary idea of biodegradable polymers. Preparation, properties and uses :- Fiber – Polyamides (Nylons 6 & 66) and Polyethylene Terephthalate (PET). Rubber/Elastomers – Natural rubber, Cis-trans rubber, Vulcanization of rubber, Synthetic Rubber : - Buna-S & Buna-N, Plastic :- (Thermoplastic & Thermosetting polymers) Phenolic resins, Urea formaldehyde resins, Silicon resins.

Module 5 : Nanotechnology and Spectroscopic Techniques (9 Hrs.)

Introduction of nanotechnology, growth of nano particles (Sol-gel process), An overview of various analytical techniques, Fundamentals of spectroscopy, Principle, Instrumentation and Applications of Ultraviolet–Visible spectroscopy, Infrared spectroscopy & Gas Chromatography.

Course Outcome: Students will be able to:

CO1: Understand the principles of hardness and identify suitable softening methods.

CO2: To acquire knowledge about fundamentals of lubricants and their physiochemical properties.

CO3: Define and analyze the characteristics of coal and coke.

CO4: To gain the knowledge of polymers, bio-degradable polymers and engineering applications of polymers.

CO5: Demonstrate and apply basic concepts of nanotechnology. To impart knowledge on the essential aspects of standard analytical techniques for Spectroscopy and Chromatography.

Textbooks/References

1. Engineering Chemistry, Satyaprakash & Manisha Agrawal, Khanna Book Publishing.
2. Engineering Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.
3. Essentials of Physical Chemistry, Bahl & Tuli, S. Chand Publishing.
4. Applied Chemistry, Sunita Rattan, Kataria & Sons.
5. Engineering Chemistry, Baskar, Wiley India Research Gate.
6. Engineering Chemistry – I, D. Grour Krishana, Vikas Publishing.
7. Engineering Chemistry, Jain & Jain, Dhanpat Rai & Co.
8. Chemistry of the Elements:N. N. Greenwood and A. Earnshaw, Heinemann (later Elsevier).
9 Introduction to Nanotechnology: Charles P. Poole, Frank J. Owens, Wiley India Research Gate.
10. Instrumental Methods of Chemical analysis, Willard Dean, Merrittee, Tata Mac Graw Hill Ltd.
11. Laboratory Manual Engineering Chemistry, Anupma Rajput, Dhanpat Rai & Co.
12. Practical Journal of Engineering Chemistry, Dr. B. K. Mishra, Balaji learning Books.

ME02	Fundamental of Mechanical Engineering	2L : 0T:0P	2 Credits

Prerequisite (s): 10+2 Level Physics, Chemistry

Course Objective: To introduce and learn various aspects of Mechanical Engineering discipline and its applications to society and to inspire students to take up Mechanical Engineering as a career.

Course Content:

Module 1: Material (9 Hrs)

Classification of engineering material, Composition of Cast iron and Carbon steels. Mechanical properties like strength, hardness, toughness, ductility, brittleness, malleability, Hooks law and modulus of elasticity, Stress-strain diagram of ductile and brittle materials, Introduction to UTM.

Module 2: Engines (10 Hrs)

classification of Engine, Introduction to Gas power cycles, Carnot, Otto and Diesel Cycle with P-V and T-S Diagram, and its derivation for efficiency. Terminology used in IC Engine, Indicated, Brake power, Mechanical Efficiency. Working of two strokes, four strokes Petrol and Diesel engines.

Module 3: Steam Engineering (10 Hrs)

Classification and working of boilers, mountings and accessories, Performance and efficiency of Boiler, introduction to boiler draught. Formation of steam & its properties, T-V, H-S,T-S Diagram, use of steam table with simple numerical Problem.

Module 4: Fluids and Thermal Science (12 Hrs)

Fluid properties. Types of fluids, Newton's law of viscosity, Pascal's law, Bernoulli's equation for incompressible fluids, working principle of Hydraulic machines like turbines, Thermodynamic system, properties, state, process, Zeroth, First and Second law of thermodynamics.

Module 5: Production Engineering: (9 Hrs)

Elementary theoretical aspects of production processes likecasting, carpentry, welding, Black smithy, fitting, Introduction to Lathe and Drilling machines and their various operations, welding classification and working principle.

Course Outcomes:

After completion of the course, the students are able to:

CO1: Define the Engineering Materials, Properties and applications and list the various teston materials by UTM.

CO2: Understand the working of internal combustion engines and their performance.

CO3: Evaluate and analyze performance characteristics of Boilers.

CO4: Identify the Fluid properties, its laws and understand the basic concept of first andsecondLaw of Thermodynamics.

CO5: Experiment with various manufacturing processes; carpentry, black smithy and fitting.

Text Book/ References:

1.Basic Mechanical Engineering, by C.M. Agrawal, Basant Agrawal, Publisher: Wiley 2008.

2.Basic Mechanical Engineering by Sadhu Singh, Publisher: S Chand 2009.

3.Kothandaraman & Rudramoorthy, Fluid Mechanics & Machinery, New Age, 2007.

4.Nakra & Choudhary , Instrumentation and Measurements, TMH,2003

5.Nag P.K, Engineering Thermodynamics, TMH, 2010.

6.Ganesan , Internal Combustion Engines, TMH, 2008

7.M.I. Khan, Industrial Engineering, New Age International, 2004

CE02	Engineering Mechanics	2L:0T:0P	2 Credits

Course Objectives: Students will able to understand the basic engineering mechanics concept.

Course Content:

Module 1: Introduction to Engineering Mechanics concepts (10 Hrs)

System of Forces, Components in Space – Resultant, Moment of Forces and its Application; Couples and Resultant of Force System, Equilibrium of System of Forces, Free body diagrams, Equations of Equilibrium of Coplanar Systems and Spatial Systems; Graphical and Analytical Treatment of concurrent and non-concurrent coplanar forces, force diagrams and Bow's notations, Lami's theorem, application to simple engineering structures and components

Module 2: Centre of Gravity and moment of Inertia (10 Hrs)

Parallel axis and Perpendicular axis theorem, Centroid of plane figures and centre of gravity of masses and forces, moment of inertia of area and mass, radius of Gyration, principle axes of sections and principle of inertia. Symmetrical as well as unsymmetrical Section.

Module 3: Introduction to Beams (8 Hrs)

Beams: Types of Beams: Simply Supported Beam, Overhanging Beam, Cantilever Beam. Types of Supports of a Beam or Frame: Roller, Hinged and Fixed Supports. Different Types of Loading. Support Reaction of a Beam

Module 4: Introduction of Trusses (10 Hrs)

Trusses: Meaning, Types, Basic Relation between Joint, Member and Reactions (m,j,r),Analysis of Plane Trusses: Method of Joints, Method of Sections.

Module 5: Shear Force and Bending moment (10 Hrs)

Introductions to shear force and Bending Moment and to draw shear force and bending moment diagram for Point Load, UDL and UVL for Cantilever and Simply supported beam.

Course Outcomes:

Students will be able to

CO1: Apply concepts of forces, their resolution and applications in engineering practice.

CO2: Compute centroid, Centre of gravity and moment of inertia of various symmetrical and unsymmetrical sections.

CO3: Understand the basic concept of Beams, Supports, Loads and their Types.

CO4: Understand the basic concept of Plane Trusses and the methods of their analysis.

CO5: Introduce the concept of shear force and bending moment diagram.

Textbooks/References:

1. Beer, Pierre, F., Johnston, E. R., Eisenberg, E. R., Mazurek, D.F., Clausen, W. E. and Cornwell,P. J.. Vector mechanics for engineers. Vol. 4. New York: McGraw-Hill, 1977.
2. Prasad I. B., Applied Mechanics, Khanna Publication,19th edition, 2018.
3. Prakash S. and Mogaveer; Elements of Civil Engg & Engg. Mechanics; PHI, 2012.
4. Timoshenko, Stephen P., Mechanics of structure, East West press Pvt. Ltd, 1995.
5. Rajput R. K. , Engineering Mechanics, S.Chand & Co., 2013
6. Verma, M. K., Introduction to Mechanics", Universities Press, 2016.

EE01	**Basic ElectricalEngineering**	**2L:0T:0P**	**2 Credits**

Course Objectives:

To acquaint students with the basic concepts and properties of electrical circuits & magnetic circuits, along with the construction, operation & its practical applications related to single/ threephase circuits, transformers & rotating machines and measuring instruments.

Course Contents (Module 1 to 5):

Module 1: DC circuits & magnetic circuits (6 Hrs.)

a) DC Circuits: Active & passive elements, voltage & current sources, voltage divider & current divider rules, Kirchoff's laws, star-delta transformation, energy and power in elements.

b) Magnetic Circuits: M.M.F., field strength, flux density, reluctance, comparison between electric and magnetic circuits, energy stored in magnetic circuits, Faradays laws of electromagnetic induction, B-H curve for magnetic & non-magnetic materials,hysteresis and eddy current losses.

Module 2: Single & Three phase AC Circuits (6 Hrs.)

a) Single phase AC Circuits: Circuit analysis in sinusoidal steady state, concept of phasor, impedance, admittance, phasor diagrams, complex, real and reactive power in ac circuits, power factor and power factor correction, electricity distribution system inhouses.

b) Three phase AC Circuits: Advantages of three phase system, phase sequence, relation between line and phase quantities for balanced star/ delta connected circuits, power measurement in three phase circuits.

Module 3: Single Phase & Three Phase Transformers (6 Hrs.)

Construction & working principle of transformer, transformer ratings, EMF equation, equivalent circuits, phasor diagram, voltage regulation, losses & efficiency.

Elementary idea about generation of three phase power by Conventional/ Renewable energy sources. Types of transmissions/ distribution systems, Statistical data in respect of power generation & transmission voltages in India.

Module 4: Introduction to Single/ Three Phase Machines (5 Hrs.)

Introduction to single phase machines & its applications.

Construction, principle & applications of three phase synchronous generator/ motors, three phaseinduction motors.

Module 5: Measuring Instruments and Circuit Protection devic (4 Hrs)

Working principle & types of Voltmeters, ammeters, wattmeter, multi-meter and energy meter,fuses and miniature circuit breakers (MCBs).

Course Outcomes: Students will be able to:

CO1: formulate and analyses basic electric and magnetic circuits.

CO2: analyses single & three phase AC circuits and power factor improvement.

CO3: understand the basic principles of working & performance of single/ three phase transformers.

CO4: understand the basic principles of working & performance of single/ three phase rotatingmachines

CO5: understand/ explain the types of measuring instruments for electrical quantities.

Textbooks/ References :

1. Vincent Del Toro, "Electrical Engineering Fundamentals", Prentice-Hall of India.

2. D.P. Kothari, I.J. Nagrath, "Basic Electrical Engineering", TMH Publishing Co. Ltd.,New Delhi, 3rd edition.

3. J.B. Gupta, "Basic Electrical and Electronics Engineering", Publisher: S.K. Kataria &Sons; Edition: 6th 2011; Reprint: 2020.

4. V. N. Mittal and Arvind Mittal, "Basic Electrical Engineering" McGraw Hi

5. R. S. Muller, T.I. Kamins, "Electronics for Integrated Circuits", 3rd edition, Wiley-India, New Delhi, 2012.

HS02	Communicative English	2L:0T:0P	2Credit

Course Objectives:
Make students proficient in English language to meet their futuristic professional purposes.

Course Contents:

Module 1: Basics of Grammar and Vocabulary Development (8 Hrs.)
Articles, Tenses, Types of Sentences, Subject-Verb Agreement, Prefixes and Suffixes in English, Synonyms, Antonyms, One Word Substitution, Homophones, Homonyms, Analogy, Idioms, Proverbs and Phrasal Verbs, Jargon (Business, Political, Financial, Linguistic, Military, Legal, Workplace, Medical, Technical, Foreign Affairs)

Module 2: Fundamentals of Communication (9 Hrs.)
Definition of Communication, Process of Communication, 7C's of Communication, Types of Communication: Verbal and Non-Verbal Communication and its types, Barriers to Communication and ways to overcome it.

Module 3: Reading Skills (8 Hrs.)
Introduction and Benefits of Reading, Types of Reading, Techniques of Reading (SQ3R method), Reading Comprehension, Cloze Passages, Para Jumbled

Module 4: Writing Skills (10 Hrs.)
Planning, Drafting and Editing, Précis writing, Structure of formal letter, Types of letters: Enquiry, Quotation, Order, Complaint, Adjustment, Resume, CV & Cover letter (Job Application)

Module 5: Learning Language through Literature (10Hrs.)
1. **Non-Fiction**: Atomic Habits by James Clear
2. **Literary Book**: Wise and Otherwise by Sudha Murthy
3. **Poem**: The Night of the Scorpion by Nissim Ezekiel

Student will select literature and do the assigned work under the mentorship of a teacher individually or in group.

Course Outcomes:

CO1: To apply functional grammar and to enrich vocabulary of the students by learning the formation of new words through suffixes-prefixes, synonyms-antonyms.

CO2: To understand and apply communication theory, practice and ready for better presentation in professional life.

CO3: To help comprehend, interpret and develop reading comprehension.

CO4: To identify and apply the skills, element of business letter writing and drafting in office communication.

CO5: To analyze, interpret, summarize and paraphrase through selected literature (book review).

Text Books

1.Murphy's English Grammar by Raymond and Murphy: Cambridge University, New Delhi, 2008.
2. Remedial English Grammar by F.T. Wood, Macmillan, 2007.
3. Essential English Grammar by Raymond and Murphy, Cambridge University, New Delhi, 2012.
4. English for Effective Communication by Sanjay Kumar and Pushp Lata: Oxford University Press, New Delhi 2015.
5. English Language Skills by Aruna Koneru: McGraw Hills Education (India) Pvt. Ltd., New Delhi, 2015.
6. Collected Poem 1952-1988,Nizim Ezekiel, Oxford University Press,1989
7. A Brief History of Humankind by Yuval Noah Harari HarperCollins Publishers,2017
8. Animal Farm by George Orwell, Standard Edition,1996

Reference Books

1. Aarts, Bas (2011). Oxford Modern English Grammar, New York: Oxford University Press
2. Ajmani, J. C. Good English: Getting it Right. New Delhi: Rupa Pubications, 2012.
3. Collins, Patrick. Speak with Power and Confidence. New York: Sterling, 2009.
4. Dhanavel, S.P. (2010). English and soft skills (V-1). Chennai: Orient Blackswan.
5. Fitikides, T. J. Common Mistakes in English. London: Orient Longman, 1984.
6. Rutherford, Andrea J. Basic Communication Skills for Technology: Second Edition. Delhi: Pearson Education, 2007.

CH01(P)	**Applied Chemistry Lab**	**0L:0T:2P**	**1 credit**

List of Experiment:

1) Determine the chloride ion in a given water sample by Argentometric method.

2) To determine total hardness of given water sample by Complexometric titration method.

3) Determine the types of alkalinity in terms of $CaCO_3$ equivalents in given water sample.

4) To find out the viscosity index of given lubricating oil with change in temperature by Redwood viscometer No.1.

5) Determination of cloud point & pour point of lubricating oil sample.

6) Determination of the flash & fire points of the given lubricating oil sample by Penskey Marten's Apparatus.

7) Determination of flash & fire points of the given lubricating oil sample by Abel's Apparatus.

8) Study of Ultraviolet–Visible spectrophotometer.

9) To determine the total dissolved solids in a given water sample.

10) Calculate the percentage moisture content in a given sample of coal.

Course Outcome: Students will be able to:
CO1: Determine the hardness, amount of chloride and alkalinity in water.
CO2: Study the properties of lubricant to compare their quality.
CO3: Define and analyze the important characteristics through Flash Point & Fire Point apparatus.
CO4: Learn advanced instrumental techniques like Ultraviolet–Visible spectroscopy.
CO5: Demonstrate properties of coal and its analysis.

Textbooks/ References :

1.Engineering Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.
2.Engineering Chemistry, Baskar, Wiley India Research Gate.
3.Instrumental Methods of Chemical analysis, Willard Dean, Merrittee, Tata Mac Graw Hill Ltd.
4.Laboratory Manual Engineering Chemistry, Anupma Rajput, Dhanpat Rai & Co.
5.Practical Journal of Engineering Chemistry, Dr. B. K. Mishra, Balaji learning Books.

CE02(P)	Engineering Mechanics Lab	0L:0T:2P	1 Credit

List of Experiment:

1. To verify law of parallelogram of forces
2. To verify the law of triangle of forces
3. To verify the polygon law of forces
4. To verify lami's theorem
5. To verify the law of moments using bell crank lever.
6. To find the support reactions of a simply supported beam.
7. To determine moment of inertia of a given fly-wheel about its polar axis.
8. To determine the coefficient of friction of different parts of the surface on horizontal plane usingdifferent materials.
9. To determine the mechanical advantage, velocity ratio and mechanical efficiency of the simplewheel and axle.

Course Outcomes:

Students will be able to

CO1. Apply concepts of forces, their resolution and applications in engineering practice.

CO2. Compute centroid, Centre of gravity and moment of inertia of various symmetrical **andunsymmetrical sections.**

CO3. Understand the basic concept of Beams, Supports, Loads and their Types.

CO4. Understand the basic concept of Plane Trusses and the methods of their analysis.

CO5. Introduce the concept of shear force and bending moment diagram.

Textbooks/References:

1. Sharma, A. K. (2009), "Engineering Mechanics Practical".

EE01(P)	**Basic Electrical Engineering Lab**	**0L:0T:2P**	**1 Credits**

Course Objectives:

To acquaint students with the basic concepts and properties of electrical circuits & magnetic circuits, along with the construction, operation & its practical applications related to single/ threephase circuits, transformers & rotating machines and measuring instruments.

List of Experiments

1. To verify KVL and KCL.
2. To determine the value of resistance and inductance of a choke coil.
3. Measurement of 3 phase power by 1, 2 & 3 wattmeter method.
4. To study & analysis of series R-L-C circuit.
5. To study & analysis of parallel R-L-C circuit.
6. To perform the open circuit test and short circuit test of a single phase transformer.
7. To perform Load Test on single phase transformer for determining the efficiency & voltageregulation.
8. Constructional study of rotating electrical machines.
9. To obtain the turns ratio & efficiency of single phase transformer by direct loading.

HS02(P)	Language Lab	0L:0T:2P	1 Credit

List of Experiment:

1. Listening Comprehension and its interpretation (Audio will be selected by the instructor)
2. Situational Conversation: Conversation through dialogue practice based on various situations.
3. Reading Comprehension: Intensive Reading Skill, Rapid Reading and Reading Aloud. (Note: Reading material to be selected by the teacher.)
4. Speaking Skills: Oral Presentation, Extemporary, JAM, Group Discussion
5. Resume Writing: Preparation of Digital Resume & Video Resume

Optional: Developing Critical Thinking through Film Review or Book Review

6. Practice session through Wordsworth Software in Language Lab

Course Outcomes :

CO1: To apply functional grammar and to enrich vocabulary of the students by learning the formation of new words through suffixes-prefixes, synonyms-antonyms.

CO2: To understand and apply communication theory, practice and ready for better presentation in professional life.

CO3: To help comprehend, interpret and develop reading comprehension.

CO4: To identify and apply the skills, element of business letter writing and drafting in office communication.

CO5: To analyze, interpret, summarize and paraphrase through selected literature (book review).

Lab Software:

1. Globarena Software, License version.

ME01(P)	**Tech. Shop Lab**	**0L : 0T : 2P**	**1 Credits**

Prerequisite(s):
NIL

LIST OF EXPERIMENTS

Fitting shop:

- Preparation of work piece as per the given specifications.
- Practice marking operations.

Carpentry:

- Study of Carpentry Tools, Equipment and different joints.
- Practice of Cross joint, T joint.

Foundry

- Study of tools used in foundry.

Welding:

- Study of Tools, Equipment used in welding.
- TIG Welding
- MIG Welding

Machine shop:

- Study of machine tools in particular Lathe machine
- Demonstration of different operations on Lathe machine

At the end of this course, the students should be able to:

- Practice on manufacturing of components using workshop trades including Fitting.
- Understand the carpentry tools and practice.
- Understand the foundry shop.
- Practice the welding.
- Understand the machining operations**.**

Text Books:

1.Raghuwanshi B.S., Workshop Technology Vol. I & II, Dhanpath Rai & Sons.

2.Kannaiah P. and Narayana K.L., Workshop Manual, 2nd Edn, Scitech publishers.

3.John K.C., Mechanical Workshop Practice. 2nd Edn. PHI 2010.

4. Jeyapoovan T.and Pranitha S., Engineering Practices Lab Manual, 3rd Edn. Vikas Pub.2008.