IPS Academy, Institute of Engineering & Science, Indore

(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)

Bachelor of Technology (B. Tech.)

First Year First Semester, Group-B(CSIT,AIML,AG,EC,EEE,CM,ME,CSIT-CS, IoT)

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	MA02	Calculus	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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BSC-MA02	Calculus	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 Sequence and Series: Definition of sequence & series, Types of sequences (Bounded, Unbounded, Convergent, Divergent, Oscillatory, Monotonic and Cauchy's sequence), Test for convergence, Comparison test, D'Alembert;s ratio test, Raabe's test, Logarithmic test, Cauchy's root test, Leibnitz test. **(9 Hrs.)**

Module-2 Differential Calculus: Review of limits, Continuity and differentiability of univariate functions, Rolle's theorem, Mean value theorem, Taylor's series and Maclaurin's series, Expansion of function using Taylor's series and Maclaurin's series. **(9 Hrs)**

Module-3 Definite Integral: Fundamental theorem, Properties of definite integral, Integral as limits of a sums and its application in summation of a series, Beta and Gamma function and their properties, Duplication formula. **(10 Hrs)**

Module-4 Fourier Series: Introduction of Fourier series, Dirichlet's conditions, Parseval's identity for Fourier series, Fourier series for even and odd functions, Half range Fourier series, Fourier sine and cosine series in interval. **(9 Hrs)**

Module-5 Vectors: Inner product (Dot product), Vector product (Cross product), Limit of a vector function, Vector differentiation, Velocity and Acceleration, Gradient, Directional Derivative, Divergence, Curl, Line integral. **(8 Hrs)**

Textbooks/References:

1. S.P. Thompson, A Text Book of Higher Mathematics: Learning Calculus in a simple way, 2017.
2. I.A. Maron, Problems in Calculus of One Variable, Arihant Publications, 2016.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, Pearson, 14th Edition, 2018.
4. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 10th Edition, 2018.
5. T. Veerarajan, Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2017.

6. B. V. Ramanna, Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 2017.
7. R. K. Pandey, Vector Calculus, Oxford, 2012.
8. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2020.
9. Shanti Narayan , Differential Calculus , S. Chand and company, New Delhi, 2013.

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Applied Chemistry

(Common for All Branches)

CH - 01	**Applied Chemistry**	**L - 3**	**3**

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

Sources,Impurities, Hardness & its units, Determination of hardness by EDTA method. Alkalinity & its determination and related numerical. 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

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.

Module 3: Fuel & Carbonization

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

Introduction & Classification of polymers, Mechanism of polymerization:- Free radical, Ionic polymerization, Elementary idea of biodegradable polymers. Preparation, properties and uses of: - 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. Resin:- Phenolic resins, Urea formaldehyde resins.

Module 5 : Nanotechnology and Spectroscopic Techniques

Introduction of nanotechnology, growth of nano particles by Sol-gel process. 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.

Suggested Reading

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.

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Mechanical Engineering Department

B. Tech

ESC - ME02	**Fundamental of Mechanical Engineering**	**2L : 0T (2 Hrs)**	**Credits: 02**

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 **(9 hrs)**

Materials: 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 **(10 hrs)**

Engines: 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 **(10 Hrs)**

Steam Engineering: 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 **(12 hrs)**

Fluids and Thermal Science: 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 **(9 hrs)**

Production Engineering: Elementary theoretical aspects of production processes like casting, 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:

1. Define the Engineering Materials, Properties and applications and list the various test on materials by UTM.
2. Understand the working of internal combustion engines and their performance.
3. Evaluate and analyze performance characteristics of Boilers.
4. Identify the Fluid properties, its laws and understand the basic concept of first and secondLaw of Thermodynamics.
5. 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. Introduction to generative AI tools for visualizing free-body diagrams and verifying equilibrium equations.

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. Introduction to graphical visualization of shear force and bending moment diagrams using spreadsheet-based computational tools.

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 inac circuits, power factor and power factor correction, electricity distribution system inhouses.

b) Three phase AC Circuits: Advantages of three phase system, phase sequence, relationbetween 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 phase induction 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 phasetransformers.

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.

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B. Tech. First Year (I &II Semester)

Branch- Common to All Disciplines

Course Category	Subject Title	Subject Code	L	T	P	Credit
HSMC	Communicative English	HS02	2	0	0	2

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

Course Contents:

Module-I
Basics of Grammar and Vocabulary Development:
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-II
Fundamentals of Communication:
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- III
Reading Skills:
Introduction and Benefits of Reading, Types of Reading, Techniques of Reading (SQ3R method), Reading Comprehension, Cloze Passages, Para Jumbled

Module- IV
Writing Skills:
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 –V
Learning Language through Literature:
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. Atomic Habits by James Clear Random House Business Books (30 October 2018)
8. Wise and Otherwise by Sudha Murthy Penguin India; Revised edition (18 July 2006); Penguin India
9. Communication Skills by Neeta Sharma: Satya Prakashan, Tech India Publication, New Delhi,2019.

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.

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LC - Applied Chemistry

(Common for All Branches)

LC-CH-01	**Applied Chemistry**	**P - 2**	**1**

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: Students will be able to determine the hardness, amount of Chloride and alkalinity in water.

CO2: Students will be able to study the properties of lubricant to compare their quality.

CO3: Students will be able to define and analyze the characteristics.

CO4: Students will be able to learn advanced instrumental techniques.

CO5: Students will be able to demonstrate basic properties of coal and its analysis.

learn safety rules in the practice of laboratory investigations

Suggested Reading

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, Anupama 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 using different materials.
9. To determine the mechanical advantage, velocity ratio and mechanical efficiency of the simple wheel 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 **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. 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 & voltage regulation.
8. Constructional study of rotating electrical machines.
9. To obtain the turns ratio & efficiency of single phase transformer by direct loading.

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B. Tech. First Year (I & II Semester)
Branch- Common to All Disciplines

Course Category	Subject Title	Subject Code	L	T	P	Credit
HSMC	Language Lab	HS02(P)	0	0	2	1

List of Experiments:

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 Globarena English Lab Software in Language Lab

Course Outcomes (Cos)

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.

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Mechanical Engineering Department

B. Tech

SBC –ME 01 (P)	**Tech Shop Lab**	**0L : 0T : 2P (2 Hrs)**	**Credits: 01**

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:

- Build job of Fitting shop.
- Demonstrate carpentry tools and construct job.
- Demonstrate the foundry shop.
- Demonstrate the welding.
- Explain the different types of 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.