MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

ACADEMIC SECTION

CURRICULAR STRUCTURE FOR THE B.TECH. I YEAR
COMMON TO ALL BRANCHES

Teaching Scheme					Contact Hrs/ Week
S.No.	**Course Code**	**Course Name**	**Category**	**Credit**	**L-T-P**
Theory Papers					
1	CPT101	Computer Science and Programming*	PC	2	2-0-0
2	EET101	Basic Electrical Engineering*	PC	4	3-1-0
3	ECT101	Basic Electronics Engineering*	PC	4	3-1-0
4	CET102	Environmental Science and Ecology*	PC	2	2-0-0
5	MET101	Basic Mechanical Engineering*	PC	4	3-1-0
6	MAT101	Mathematics I*	PC	4	3-1-0
7	MAT102	Mathematics II*	PC	4	3-1-0
8	PHT101	Physics*	PC	4	3-1-0
9	CYT101	Chemistry*	PC	4	3-1-0
10	HST102	Basic Economics*	PC	3	2-1-0
11	HST101	Technical Communication*	PC	2	1-2-0
12	CET101	Computer Aided Engineering Drawing*	PC	2	1-0-2
Lab Courses					
1	HSP103	Language Laboratory*	PC	1	0-0-2
2	PHP102	Physics Lab*	PC	1	0-0-2
3	MEP102	Workshop Practice*	PC	1	0-0-2
4	EEP102	Electrical Engineering Lab*	PC	1	0-0-2
5	CYP102	Chemistry Lab*	PC	1	0-0-2
6	CPP102	Programming Lab*	PC	1	0-0-2
7	ECP102	Electronics Engineering Lab*	PC	1	0-0-2
Creative Arts/ Sports/ NSS*					
Discipline					
Total Credits				**46**	

Total Credits = 46

*Some batches will be offered these subjects in first odd semester and the other in second even semester

Sports

NSS

Creative Arts: 1. Music, 2. Drama, 3. Photography, 4.Literary, 5. Fine Arts, 6. Adventures

** Extra Curricular Activities (Creative Arts/ Sports) once opted cannot be changed

Extra Curricular Activities may run in both semester but evaluated and tabulated in second semester only.

Note: In case a particular activity is opted by larger number of students and some students cannot be accommodated, the Chief Advisor Sports in consultation with Student Welfare will reallocate Creative Arts/ Sports for such students.

Syllabus

Theory Papers

Code: CPT101	Computer Science and Programming	Credit: 02 L-T-P: (2-0-0)
Course Content	**Overview of Computer organization**: Historical perspective computer applications in various fields of science and management. **Data Representation**: Number Systems, Character Representation Codes, Binary, Hex, Octal Codes and Their Inter Conversions. Binary Arithmetic, Floating-point Arithmetic, Signed and Unsigned Numbers. **Problem Solving Theory**: Flow Charts, Introduction to Algorithm, Termination and Correctness. **Basic Programming in 'C'**: Data Types, Control Structures, Arrays, Structures and Unions, File Handling.	
Important Text Books/References	• Fundamental of Computers and Programming with C, by A. K. Sharma, Dhanpat Rai Publications, New Delhi. • Fundamental of Computers, by E Balagurusamy, Tata McGraw-Hill Education. • Programming In Ansi C, by E Balagurusamy, Tata McGraw-Hill Education. • Let us C, by Y. Kanetkar, BPB.	

Code: EET101	Basic Electrical Engineering	Credit: 04 L-T-P: (3-1-0)
Course Content	**D. C. Circuits:** Source conversion, Delta-Star and Star-Delta transformations, Node voltage and mesh current methods. Superposition principle, Thevenin's, Norton's, Maximum Power Transfer theorems. **A. C. Circuits:** Single Phase A. C. Circuits: Phasor Algebra, Solution of R, L, C series, parallel and series-parallel circuits, Resonance in Series and parallel R-L-C circuits. Three- Phase A. C. Circuits: Three-phase e.m.f. generation. Delta and Star Connections. Line and phase quantities, Solution of three-phase balanced circuits, phasor diagram, Measurement of power in 3-phase circuits. **Electrical Measuring Instruments:** Introduction, types of measuring instruments. Deflection, controlling and damping torques. PMMC instruments, shunts and multipliers. Moving iron ammeter and voltmeter, Dynamometer wattmeter. **Transformers:** Construction, theory and operation of single-phase transformer, e.m.f. equation. Development of equivalent circuit and phasor diagram. Open-circuit and short-circuit tests, efficiency and voltage regulation. **Rotating Machines:** Basic construction, principle of operation and applications of DC motors, 3-phase, 1-phase induction motors and synchronous motors. (Qualitative treatment only).	

Important Text Books/References	• Electrical Engineering Fundamentals, By V. Del Toro, PHI • Basic Electrical Engineering, By D. P. Kothari and I. J. Nagrath, Tata McGraw Hill

Code: ECT101	**Basic Electronics Engineering**	**Credit: 04** **L-T-P: (3-1-0)**
Course Content	**Analog Electronics** **Diode Circuits:** Band structure of insulators, Metals & Semiconductors, mobility, conductivity, doping, Electrons and holes in an intrinsic semiconductor, Donor and acceptor impurities, charge densities in a semiconductor, Hall Effect. Current components in diode, transition & diffusion Capacitances, Single phase rectifier (half-wave and full-wave rectifier) & their analysis, compare half-wave and full-wave rectifiers, compare bridge and center-tap rectifier, various types of filter (Capacitor filter, Inductor Filter, Choke-Input LC filter, π filter), clipping circuits (series and shunt) & clamping circuits . **Bipolar Junction Transistor (BJT):** Junction Transistor, Current components in transistor, transistor construction, The transistor as an Amplifier, various configurations (CE, CB, CC) and characteristics (Input and Output) of BJT's configurations, cut off, saturation and active region, Early effect, analytical expression for transistor characteristics (Ebers-Moll Model). **Transistor Biasing & Stabilization:** Operating point. DC &AC load line, biased stability, various types of transistor biased circuits (Fixed-bias circuit, Fixed-bias with emitter resistor, self-bias or Emitter Bias), stabilization against variation in Ico, V_{be} and β bias compensation, thermister & sensitor compensation, thermal runaway &thermal stability. **Field Effect Transistor (FET)** : Introduction to junction field effect transistor (n-channel and p-channel), comparison between BJT and JFET, Construction of JFET, the JFET Volt- Ampere characteristics, the pinch off voltage, Construction & characteristics of MOSFET (depletion type MOSFET and Enhancement type MOSFET), biasing of FET's **Digital Electronics** **Number Systems**: Binary arithmetic: addition, subtraction, multiplication and division, Base conversion, conversion formulas with examples, one's and two's compliment arithmetic. Logic Gates, Boolean algebra, Boolean postulates, Evaluation of truth functions, Truth- function calculus as Boolean algebra. **Minimization Techniques**: Using Boolean identities, standard representations for logical functions (SOP & POS forms), Karnaugh map representation, simplification of logical functions using K-map, Minimization of logical functions specified in miniterms/maxterms or Truth Table.	

Important Text Books/References	• Basic Electronics and linear Circuits, N N Bhagava (TTTI Chandigarh), TMH • Integrated Electronics, Millman Halkias, TMH. • Electronic Devices and Circuit, David A. Bell, Oxford • Electronic Devices and Circuit Theory, R. L. Boylestad, Pearson Education • Digital Circuits and Design, S Salivahanan, Vikas Publishers • Digital Electronics, Moris-Mano, PHI

Code: CET102	**Environmental Science and Ecology**	**Credit: 02**
		L-T-P: (2-0-0)
Course Content	**Ecosystems:** Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids. **Environmental Pollution:** Definition, Causes, effects and control measures of: 1. Air Pollution (Ambient and Indoor) 2. Water Pollution 3. Soil Pollution 4. Marine Pollution **Noise Pollution, Solid Waste Management**: cases, effects and control measures of urban and industrial wastes. Role of an individual in preventing pollution, Pollution case studies. **Social issues and environment:** From unsustainable to sustainable development. Urban problems related to energy, Water conservation, rainwater harvesting, and watershed management. Resettlement and rehabilitation of people: its problem and concerns case studies. Climate change, global warming, acid rain, ozone layer depletion. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Introduction to ISO 14000, Green Building Concept, Introduction to biodiversity.	
Important Text Books/References	• P. Meenakshi, "Elements of Environmental Science and Engineering", Prentice-Hall of India Pvt. Ltd. New Delhi, 2008. • P. D. Sharma, "Ecology and Environment" Rastogi Publication, 2009. • J.Glynn Henry, Gary W. Heinke, "Environmental Science and Engineering" Prentice-Hall of India Pvt. Ltd. New Delhi, 2004 • Bala Krishnamoorthy," Environmental Management"Prentice-Hall of India Pvt. Ltd. New Delhi, 2005.	

Code: MET101	**Basic Mechanical Engineering**	**Credit: 04**
		L-T-P: (3-1-0)
Course Content	**Working Fluid:** Properties of steam, Steam tables and Mollier Diagram. Steam Generators, Classification, Construction and working of Simple Vertical Boiler, Cochran boiler, Babcock and Wilcox boiler.	

	Internal Combustion Engines: Classification of I.C. Engines. Two stroke and Four stroke engines, Otto and Diesel cycles, Calculation of thermal efficiency of cycles, Construction and working of Petrol and Diesel engines, Introduction of Ignition system, Fuel system and Cooling system. **Refrigeration and Air Conditioning:** Reverse Carnot cycle, Bell Coleman cycle, Vapour Compression cycle, Calculation of C.O.P. of cycles, Working principles and schematic diagrams of Refrigerator, Desert air cooler, Air Conditioner and Ice plant. Comfort Air Conditioning, Summer Air Conditioning system. **Power Transmission:** Classification and applications of mechanical drives like belts, ropes, chains and gear drives and their velocity ratios, length of belts, power transmitted, ratio of tensions in belts and ropes, gear trains, Calculation of different parameters. **Machine Tools:** Construction and Working of Lathe, Drilling machine, Shaper and Milling machine. **Foundry:** Foundry tools and equipments, Procedure for moulding. **Welding:** Gas and Arc welding, Soldering and Brazing.
Important Text Books/References	• Mechanical Engineering by Dr. A.K.Rajvanshi • Elements of Mechanical Engineering by P.N.Gupta and M.P.Poonia

Code: MAT101	**Mathematics-I**	**Credit: 04**
		L-T-P: (3-1-0)
Course Content	**Matrices:** Rank and inverse of matrix by elementary transformation, consistency of linear system of equations and their solution. Eigen values and Eigen vectors. Cayley-Hamilton theorem (statement only) & its applications. Diagonalization of matrices. **Differential Calculus :** Curvature , Concavity, convexity and points of Inflexion, Asymptotes, Partial differentiation, Euler's theorem on homogeneous functions, Total differentiation, Approximate calculation, Curve tracing (Cartesian and five polar curves-Folium of Descartes, Limacon, Cardioids, Lemniscates of Bernoulli and Equiangular spiral). **Integral Calculus:** Improper integrals, Area and length of curves, Surface area and volume of solid of revolution. Multiple integrals, Change of order of integration (Cartesian form). **Vector Calculus:** Differentiation and integration of vector functions of scalar variables, scalar and vector fields, gradient, Directional derivative, Divergence, curl. Line integral, Surface integral and Volume integral. Green's, Gauss's and Stokes's theorems (statement only) and their simple applications	
Important Text Books/References	• R.K.Jain & S R K Iyengar, Advanced Engineering Mathematics, Narosa Pub.House • Thomas & Finney, Advanced calculus and geometry Addison-Wesley Pub. Co. • D. W. Jordan & P Smith, Mathematical Techniques, OXFORD • Peter V. O'Neil, Advanced Engineering Mathematics, Cengage Learning,NewDehli	

	• B.V.Ramana, Higher Engineering Mathematics, McGraw – Hill.

Code: MAT102	Mathematics-II	Credit: 04
		L-T-P:(3-1-0)
Course Content	**Differential Equations:** differential equations of first order & of first degree: Linear form, reducible to linear form, exact form, Reducible to exact form, Picard's Theorem (statement only). **Linear differential equations with constant coefficients:** Differential equations of second & higher order with constant coefficients. **Second order Ordinary linear differential equations with variable Coefficients:** Homogeneous, Exact form, Reducible to exact form, Change of dependent variable (normal form), Change of Independent variable, method of variation of parameters. **Series Solution:** Sequence, Power series, radius of conversions, solution in series of second order LDE with variable co-efficient (C.F. only). Regular Single points and extended power series (Frobenius Method). **Fourier Series:** Fourier series, half range series, change of intervals, harmonic analysis. **Partial Differential Equation:** Formulation and classification of linear and quasi linear partial differential equation of the first order, Lagrange's method for linear Partial Differential Equation of the first order, solution by separation of variables methods, Wave and Diffusion equation in one dimension.	
Important Text Books/References	• Erwin Kreyszig, Advanced Engineering Mathmatics, John Wiley. • B.V.Ramana, Higher Engineering Mathematics, McGraw – Hill. • Peter V. O'Neil, Advanced Engineering Mathematics, Cengage Learning, NewDehli • M Ray, A Text Book On Differential equations Students Friends & Co., Agra-2 • Robert C. Mcowen, Partial Differential Equation Pearson Education. • George F. Simmons & S.G. krantz, Differential Equation Tata McGraw – Hill. • R.K.Jain & S R K Iyengar, Advanced Engineering Mathematics, Narosa • T Amarnath , An Elementary course in partial differential equations, Narosa, New Delhi. • S. G. Deo and V. Raghavendra: Ordinar Differential Equations, Tata McGraw Hill Pub. Co. ,New Delhi	

Code: PHT101	Physics	Credit: 04
		L-T-P: (3-1-0)
Course Content	**Fields**: gradient, divergence and curl, Gauss divergence theorem and Stokes theorem; laws of electromagnetism (in vector form); equation of continuity; Maxwell's equations and their interpretation; wave equation for electric and magnetic fields and its solution in	

	free space; Poynting vector and power flow. **Temporal and spatial coherence**: stimulated emission, Einstein coefficients; requirements for laser action; Types of Lasers- Ruby and He-Ne Laser; Applications of Lasers, Introduction to optical fibers in communication and numerical aperture. **Postulates of Special Theory of Relativity:** Lorrentz transformation, Addition of Velocities, relativistic variation of length, time and mass, Einstein's Mass-Energy Relation. **Compton effect:** Heisenberg's uncertainty principle and its applications; concept of phase and group velocity; wave function and Schrodinger equation-both time dependent and time independent; solution of Schrodinger equation in potential well, 3D- box and tunneling problems. **Free electrons in solids**: concept of density of states and Fermi energy, intrinsic and extrinsic semiconductors - carrier concentration and Fermi levels; Hall effect in metals and semiconductors, superconductivity: Meissner effect; concept of Cooper pairs, introduction to nano-structured materials; synthesis and properties.
Important Text Books/References	• Concepts of Modern Physics by Beiser (McGraw Hill) • Elements of Electromagnetics by Sadiku (Oxford University Press) • Introduction to Electrodynamics by Griffiths (Pearson) • Elements of Electromagnetics by Seth (Dhanpat Rai & Co.) • Engineering Physics by Joshi (Mc Graw Hill) • Solid State Physics by Wahab (Narosa) • Solid State Physics by Pillai (Wiley Eastern Ltd.) • Essentials of Engineering Physics by A. S. Vasudeva (S. Chand)

Code: CYT101	**Chemistry**	**Credit: 04**
		L-T-P: (3-1-0)
Course Content	**Chemistry of water and its treatment** : Introduction, Hardness, Degree of hardness, Determination of hardness by complexometric method (EDTA method) Municipal Water Supply: Requisites of drinking water, purification of water by Sedimentation, Filtration and disinfection methods. Water for steam Making: Sludge and scale formation and caustic embrittlement. Methods of Boiler Water Treatment: Lime Soda process (hot and cold lime soda process), Permutit or Zeolite process and Deionization or Demineralization. **Corrosion**: Introduction, theories of corrosion, Galvanic cell and concentration cell corrosion. Methods of protection against corrosion. **Lubricants**: Methods of lubrication, Uses and properties of lubricants viz. Viscosity & Viscosity index, Flash &fire point, Cloud and pour point. **Fuels and Non conventional energy sources**: Introduction and characteristics of Fuels. Solid Fuels: Gross and Net calorific values, Determination of calorific value by Bomb calorimeter and Junker's calorimeter . Liquid Fuels: Petroleum: Occurrence and composition, mining, refining and fractional distillation of crude petroleum, Cracking, Thermal and Catalytic cracking, synthetic	

	petrol and reforming. Knocking, Anti-knocking Agents, Octane number and Cetane number. Fuel Cell: Introduction to Fuel Cell, H2-O2 Fuel cell. **Explosives**: Introduction, Classification, Requisites of Explosives, Applications of Explosives. **New Engineering Materials**: Brief idea of Organic electronic materials and fullerenes. **Building materials**: Introduction, manufacture of cement and its chemistry. Refractory: Introduction, classification and requirements. Glass: Introduction, classification and types of glass. Numerical problems based on Water Treatment, Fuels and Non conventional energy sources.
Important Text Books/References	• Engineering chemistry: A Text book by S.K. Jain & K.D. Gupta, Jaipur Publishing House. • Engineering chemistry: A Text book by P.C. Jain, Dhanpat Rai & Sons. • Engineering chemistry: A Text book by S.S. Dara, S. Chand & Co.

Code: HST102	**Basic Economics**	**Credit: 03**
		L-T-P: (2-1-0)
Course Content	Basic Economic Concepts and foundations of economics for decision – making; circular flows Demand analysis and consumer behaviour; elasticity of demand and its measurement; supply analysis and price – mechanism. Production Analysis – short run and long run production functions; law of variable proportions and returns to scale. Cost Concepts and Analysis (short run and long run), Revenue curves under perfect and imperfect competition Break Even Analysis (revenue – cost –output relationship). Market Structures; pricing in perfect competition, monopoly, monopolistic competition and oligopoly. Economic Appraisal Techniques (pay - back period, NPV, IRR, cost - benefit ratio). Macro Economic Concepts such as national income, inflation, deflation, stagflation, monetary and fiscal policies, business cycles, foreign exchange rates and balance of payments	
Important Text Books/References	• Managerial Economics, H.C. Peterson, W. Cris Lewis & S.K.Jain; Prentice Hall. • Managerial Economics, Suma Damodran; Oxford University Press. • Managerial Economics, G.S. Gupta; Tata Mc Graw Hill. • Industrial Economics, An Introductory Text Book, R.R. Barthwal; New Age International (P) Limited. • Economics; Samuelson, Nordhaus; Tata Mc Graw Hill. • Managerial Economics, C.S. Barla,; National Publishing House, N. Delhi • Managerial Economics, N.D. Mathur; Shivam Book House (Pvt. Ltd.),Jaipur	

Code: HST101	Technical Communication	Credit: 02
		L-T-P: (1-2-0)
Course Content	**Objectives:** • To improve the students' key skills for effective communication including reading, listening, comprehending, speaking and composing through the lectures and tutorials. • With the increased number of smaller groups of students in the tutorials, the teaching methodology in the classroom is proposed to be more interactive so that at the end of the semester, the students are able to express themselves comfortably in English. • To assist the students in using language and literature to enhance and express their knowledge of technical, social and cultural issues. **Syllabus:** 1. **Reading and Comprehension**: Selected chapters from the prescribed textbook: Insights: A Course in English Literature and Language by K. Elango. Orient Blackswan Publishers, 2009. 2. **Writing and Composition**: Letters – Formal and Informal, Creative Writing, Précis Writing, Résumé, Projects on Social Issues 3. **Language Skills:** Common Errors, Prepositions, Tenses, Passive Voice, Conditional Sentences, Reported speech, Subject-Verb Agreement, Idioms and Proverbs, Vocabulary-building.	
Important Text Books/References	• Eastwood, John. Oxford Practice Grammar: Oxford University Press. • Murphy, Raymond. English Grammar in Use, Third Edition. Cambridge University Press. • Greenbaum, Sydney. Oxford English Grammar. Oxford University Press. • Carter, Ronald, Rebecca Hughes, Michael McCarthy. Exploring Grammar in Context - Upper Intermediate and Advanced. Cambridge University Press. • Hewings, Martin. Advanced Grammar in Use: A Self-study Reference and Practice Book. Cambridge University Press, 2005.	

Code: CET101	Computer Aided Engineering Drawing	Credit: 02
		L-T-P: (1-0-2)
Course Content	**Basic Concepts:-** Importance of drawing, Drawing standards, Types of Lines, Layout and printing of drawing, Principles and methods of dimensioning, Scaling **Introduction to AutoCAD** **Orthographic Projections:-** Introduction to different types of projections and their uses, Orthographic projection, I angle and III angle projections Projection of points lying in different quadrants, Projections of lines inclined to one or more planes, Traces, True length of line and its inclination with principal planes, Projection on auxillary plane.	

	Projection of planes other than reference planes, Planes perpendicular and inclined to principal planes, Traces, Cases of planes of different shapes and making different angles with one or both reference planes, True shape of the plane figure. Projection of regular solids and simple objects like tetrahedron, cube, polygonal prism and pyramid etc. Cases of solids placed in different positions with axis, faces and/or side of solids making given angles with reference planes. **Sections :-** Importance of sectioning, Principles and types of sectioning, Cutting plane representation, Sections of solids, Sectional views and true shape of sections, Hatching. **Development of Surfaces :-** Development of surface of simple and sectioned solids. **Method of drawing projections:-** Isometric and oblique projections Drawing of elements like screws, nuts and bolts, locking, welding and riveting joints and symbols
Important Text Books/References	• Engineering Drawing – P.S. Gil • Engineering Drawing – N.D. Bhatt • Engineering Drawing – P. Bali

Practical and Sessional Subjects

Code: HSP103	**Language Laboratory**	**Credit: 01** **L-T-P:(0-0-2)**
Course Content	**Objectives:** • To provide an opportunity to the students to improve their pronunciation and language skills through the Language Laboratory software. • To engage them in interactive exercises focusing on improving their communication skills and fluency in English. **Syllabus:** 1. Pronunciation Practice: Practice Phonetic Symbols (IPA) and Transcription on Language Laboratory Software 2. Language Skills: Practice in Common Errors, Prepositions, Tenses, Passive Voice, Conditional Sentences, Reported Speech, Subject-Verb Agreement, Idioms and Proverbs on Language Laboratory Software 3. Speaking Skills Practice: Self-presentation, Extempore, Just-a-Minute, Weave-a-Story, Elocution, Expansion of Themes, and Presentation of Projects	
Important Text Books/References	• Jones, Daniel. English Pronouncing Dictionary. ELBS. • Sethi, J., P.V. Dhamija. A Course in Phonetics and Spoken English. PHI Learning. • McKay, Matthew, Martha Davis, Patrick Fanning. Messages: The Communication Skills Book. New Harbinger Publications; Third Edition, 2009. • Mitra, Barun K. Personality Development and Soft Skills. Oxford University Press.	

Code: PHP102	Physics Lab	Credit: 01
		L-T-P:(0-0-2)
Course Content	The students shall complete at least **nine** experiments out of the following during the semester: 1. To study the Hall effect in a semiconductor and determine the Hall coefficient. 2. To determine the value of Planck's constant using a photo-cell. 3. To determine the band gap of a given semiconducting p-n junction diode (n or p type). 4. To determine the input, output and transfer characteristics of a given transistor (npn or pnp). 5. To study the I-H curve and hysteresis losses in a given magnetic material. 6. To study the variation of magnetic field along the axis of a uniform circular coil and also determine its diameter. 7. To study the temperature variation of resistivity using four probe method and determine the band gap of a given semiconductor. 8. To study the interference fringes in Fresnel's biprism and determine the wavelength of sodium light. 9. To study the diffraction spectra using a plane transmission grating and find the wavelength of light constituents. 10. To study the polarization of light using a biquartz polarimeter and determine the specific rotation of glucose solution. 11. To study the formation of Newton's rings and determine the wavelength of sodium light. 12. To determine the numerical aperture of a given optical fibre cable using a laser source. 13. To determine the dielectric constant of a given solid.	

Code: MEP102	Workshop Practice	Credit: 01
		L-T-P (0-0-2)
Course Content	1. **Machine Shop** -- 3 Turns a) Introduction to Lathe, Shaper, Drilling, Grinder, Milling machines -- 1 Turn b) Job on lathe machine--Simple Turning, Step turning, facing, Knurling,--2 Turns 2. **Welding Shop** -- 3 Turns a) Introduction to Gas, Arc and Spot Welding-- 1 Turn b) Job on Spark and Gas welding --2 Turns 3. **Foundry**-- 3 Turns a) Introduction to Oil , Electric Furnace, Foundry tools, Sand, etc-- 1 Turn b) Moulding Job --2 Turns 4. **Fitting Shop** -- 3 Turns a) Introduction to various Fitting tools, -- 1 Turn b) Job- Filing, Drilling, Tapping etc, --2 Turns	

Code: EEP102	Electrical Engineering Lab	Credit: 01
		L-T-P: (0-0-2)
Course Content	**LIST OF EXPERIMENTS:** PREREQUISITE: 1. The knowledge of electrical science lab. 2. The knowledge of the electric supply distribution system. 3. The knowledge of basic measuring instruments. 4. The knowledge of the behavior of the basic circuit elements R, L and C. **PART-A (PRACTICAL)** 1. To determine the inductance and effective resistance of the given choke coil. 2. To observe the operation of a given fluorescent lamp and determine its power factor. 3. To verify KCL and KVL for a given network on d.c supply. 4. To verify Thevenin's theorem for a given network. 5. To verify Norton's theorem for a given network. 6. To observe sinusoidal a.c. waveform on C.R.O. and to determine its frequency, time period, peak value, peak factor and form factor. **PART-B (STUDY)** 1. To study various electrical accessories. 2. To study various electrical wirings. 3. To study various electrical appliances. (Electric iron, immersion rod, table fan, ceiling fan etc.) 4. To study various electrical lamps (sodium vapour, mercury vapour, incandescent etc.)	

Code: CYP102	Chemistry Lab	Credit: 01
		L-T-P :(0-0-2)
Course Content	**List of Experiments** 1. To determine the percentage of available chlorine in given sample of bleaching Powder. 2. To determine hardness of Water by EDTA method. 3. To determine the total alkalinity of water. 4. To determine the amount of various oxidizing agents iodometrically. 5. Analysis of ores and alloys. (i) Estimation of copper in brass. (ii) Estimation of iron in plain carbon steel. (iii) Estimation of iron in Hematite ore. 6. Preparation of Bakelite polymer. 7. Synthesis of Nylon 66 8. Synthesis of Melamine. 9. Determination of Viscosity of an oil by Redwood Viscometer.	

	10. To carry out Conductometric titration.
Important Text Books/References	1. Laboratory Manual on engineering chemistry by S.K. Bhasin & Sudha Rani, Dhanpat Rai Publishing Company, New Delhi. 2. A text book of Practical chemistry by K.D. Gupta & K.K. Saxena University Press, Jaipur.

Code: CPP102	**Programming Lab**	**Credit: 01**
		L-T-P: (0-0-2)
Course Content		

Formula based

1. Wap to perform addition of two numbers.
2. Wap to perform operations of a calculator (all primitive operations '+', '-', '*', '/').
3. Wap to determine area and circumference of a circle.
4. Wap to calculate simple and compound interest when rate, principal and time is given.
5. Wap to interchange values of two variables using a third variable.
6. Wap to find out distance between two points e.g. (x1, y1) and (x2, y2).
   Distance=$\sqrt{(x2-x1)^2+(y2-y1)^2}$

IF-else

1. Wap to accept a year and find whether it is a leap year or not.
2. Wap to determine type of triangle (i.e. isosceles, equilateral or scalene) when three sides of it are given.
3. Wap to find largest of three numbers.
4. Wap to accept marks of a student in any three subjects and display his/her result (I /II /III / FAIL).
5. Wap to calculate amount of a telephone bill for the following criteria.

	Calls	charge per call (Rs.)
a)	1-150	0
b)	151-250	.9
c)	251-400	1.2
d)	401 on wards	1.5

6. Wap to calculate amount of a electricity bill for the following criteria.

	Units	charge per unit (Rs.)
a)	1-100	0
b)	101-200	1.5
c)	201-400	2.5
d)	401 on wards	3.5

Switch case

1. Wap to perform 5 basic arithmetic operations depending on what the user wants. Display a menu.
   a. '+' For addition
   b. '-' For subtraction
   c. '*' For multiplication
   d. '/' For division
   e. '%' For modulus.
2. Wap to take month no. input and display no. of days into that month.
3. Wap to take month no. input and display total no. of days into those months

LOOPING CONSTRUCTS (For, While, DO-while)

1. Print following series
   a. 1,2, …….,n terms
   b. 1,3,5,7,…..n terms
   c. 2,4,6,8,…..n terms
   d. 1,2,4,7,11,……..n terms
   e. 0, 1, 1, 2, 3, 5, 8,…….n terms(Fibonacci series)
2. Wap of find factorial of an integer no.
3. Wap to find whether a given no. is prime or not.
4. Wap to determine the area of 10 different circles.
5. Wap to read unsigned integer no. and print it in words
   Ex- 235(two three five).
6. Wap to find the sum of the digits of a given number.
7. Wap to check whether a given integer no. is palindrome or not.
8. Wap of find LCM and HCF of two numbers.

Array

1. Wap which reads a list of 'n' numbers and finds the largest of them.
2. Wap which reads a list of 'n' numbers and searches for a value.
3. Wap to perform bubble sorting (ascending /descending).
4. Wap which add/multiply two matrices A and B.
5. Wap which reads a character array and finds the length.
6. Wap which reads a string and find its length.
7. Wap to copy one string into another.
8. Wap which reads a string and reverses it.
9. Wap to concatenate two strings
10. Wap which read a string and test for palindrome.

Structures

1. Write a program to define a structure with tag book with fields author, book name and edition. Read and display the data. Also search for a given book by author name.
2. Write a program to define a structure with tag student with fields name, roll no and percentage. Define an array of 10 students and sort array on percentage.
3. Write a program to define a structure with tag complex no with fields real and imaginary. Perform addition, subtraction, and multiplication and division operation on them.

File Handling

1. Write a program to count the number of words from a file (read).
2. Write a program to store multiplication table of specific number into a file(write).
3. Write a program to copy a file from another file (read/write).

**The assignment list is not exhausted. More assignments may be added related to particular topic.

Code: ECP102	Electronics Engineering Lab	Credit: 01
		L-T-P :(0-0-2)
Course Content	**Introduction of Equipments:** 1. CRO 2. Function Generator 3. DMM/ Analog Multi-meter 4. Frequency meter 5. Power Supply **Introduction of Components:** 1. LED 2. Photo Diode 3. Capacitors 4. Resistors 5. IC Wave form display with CRO, Applications of CRO such as voltage and frequency measurement V-I characteristics of PN junction Diode V-I characteristics of Zener Diode Half Wave/ Full Wave Rectifiers Filters With Rectifiers Diode Clipper and Clamper Soldering Circuit Testing	