SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

(An Autonomous Institute affiliated to CSVTU, Bhilai)

SCHEME OF TEACHING AND EXAMINATION (Effective from 2020-2021 Batch)

B.Tech. (Electrical and Electronics Engineering) Third Semester

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1.	AM	Mathematics-III	AM100301	2	1	-	100	20	30	150	3
2.	EEE	Electrical Circuit Analysis	EEE103302	2	1	-	100	20	30	150	3
3.	EEE	Electrical Machine-I	EEE103303	3	-	-	100	20	30	150	3
4.	EEE	Solid State Devices	EEE103304	3	-	-	100	20	30	150	3
5.	EEE	Fundamental of Electrical Power Generation & Renewable Engineering	EEE103305	3	-	-	100	20	30	150	3
6.	EEE	Electrical Circuit Analysis Lab	EEE103391	-	-	2	25	-	25	50	1
7.	EEE	Electrical Machine-I Lab	EEE103392	-	-	2	25	-	25	50	1
8.	EEE	Solid State Devices Lab	EEE103393	-	-	2	25	-	25	50	1
9.	EEE	Mini Project-I/ Electrical Workshop-I	EEE103394	-	-	2	25	-	25	50	1
10.	EEE	Health Hygiene & Yoga	EEE100395	-	-	2	-	-	25	25	1
11.	IT	Cyber Laws and Ethics	IT100396	-	-	-	-	-	25	25	-
Total				**13**	**2**	**10**	**600**	**100**	**300**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b)The duration of end semester examination of all theory papers will be of three hours.

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Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1.	EEE	Network Analysis & Synthesis	EEE103401	3	1	-	100	20	30	150	4
2.	EEE	Electro Magnetic Field	EEE103402	2	1	-	100	20	30	150	3
3.	EEE	Digital Electronics	EEE103403	3	-	-	100	20	30	150	3
4.	EEE	Electrical Measurement & Instrumentation	EEE103404	3	-	-	100	20	30	150	3
5.	EEE	Electrical Machine-II	EEE103405	3	-	-	100	20	30	150	3
6.	EEE	Digital Electronics Lab	EEE103491	-	-	2	25	-	25	50	1
7.	EEE	Electrical Measurement & Instrumentation Lab	EEE103492	-	-	2	25	-	25	50	1
8.	EEE	Electrical Machine-II Lab	EEE103493	-	-	2	25	-	25	50	1
9.	EEE	Mini Project-II/ Industrial Automation Lab	EEE103494	-	-	2	50	-	25	75	1
10.	AC	Biology for Engineers	AC100495	-	-	-	-	-	25	25	-
Total				**14**	**2**	**8**	**625**	**100**	**275**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b)The duration of end semester examination of all theory papers will be of three hours.

Subject Code : AM100301	APPLIED MATHEMATICS-III	L = 2	T = 1	P = 0	Credits =3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
The objective of this course is to familiarize the prospective engineers with techniques in calculus of multivariable and infinite series expansion of continuous function as well as some statistical treatment of discrete functions. More precisely, the objectives are: 1.To instigate a thorough knowledge of partial differential equations which arise in mathematical descriptions of situations in engineering. 2. To develop the tool of Fourier series for learning advanced Engineering Mathematics. 3. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differential equations. 4. To originate a thorough study about random quantities and their description in terms of their probability. 5. To introduce the tools of differentiation and integration of functions of complex variable that is used in various techniques dealing engineering problems.	**On successful completion of the course, the student will be able to:** CO1. To have a thorough knowledge of PDE which arise in mathematical descriptions of situations in Engineering. CO2. To make the students understand that Fourier series analysis is powerful methods where the formulas are integrals and to have knowledge of expanding periodic functions that explore variety of applications of Fourier series. CO3. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differentials equations. CO4. To study about a quantity that may take any of a given range of values that can't be predicted as it is but can be described in terms of their probability CO5. To provide a sound background of complex analysis to perform a thorough investigation of major theorems of complex analysis and to apply these ideas to a wide range of problems that include the evaluation of both complex line integrals and real integrals..

UNIT – I Partial differential equation CO1

Formation, Solution by direct integration method, Linear equation of first order, Homogeneous linear equation with constant coefficients, Non-homogeneous linear equations, Method of separation of variables; Equation of vibrating string (wave equation). [8 Hrs]

UNIT – II Fourier Series CO2

Euler's formula; Functions having point of discontinuity; Change of interval; Even and Odd function; Half range series; Harmonic Analysis. [7 Hrs]

UNIT – III Laplace transform CO3

Definition; Transform of elementary functions; Properties of Laplace transform; Inverse Laplace Transform (Method of partial fraction, Using properties and Convolution theorem); Transform of Unit step function and Periodic functions; Application to the solution of ordinary differential equations. [7 Hrs]

UNI –IV Probability distributions CO4

Random variable; Discrete and continuous probability distributions; Mathematical expectation; Mean, Variance and Moments; Moment generating functions; Probability distribution (Binomial, Poisson and Normal distributions). [7 Hrs]

UNIT – V Complex Analysis CO5

Analytic functions; Cauchy-Riemann equations and its applications to flow problems; Complex integration; Cauchy theorem (without proof), Cauchy Integral formula (without proof); Expansion of complex functions (Taylor's and Laurent's series); Cauchy Residue theorem (without proof) and its application in evaluation of real definite integrals. [7 Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers
2)	Advanced Engineering Mathematics	H. K. Dass	S. Chand Publication
3)	Advanced Engineering Mathematics	Erwin Kreyszig	John Wiley & Sons
4)	Applied Engineering Mathematics	Madan Mohan Singh	BS Publications
5)	Linear Algebra: A Modern Introduction	D. Poole	Brooks/Cole

Reference Books:

S. No.	Title	Authors	Publisher
1)	Calculus and Analytic geometry	G. B. Thomas and R. L. Finney	Pearson, Reprint
2)	Engineering Mathematics for first year	T. Veerarajan	Tata McGraw- Hill, New Delhi
3)	Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill New Delhi
4)	A text book of Engineering Mathematics	N.P. Bali and Manish Goyal	Laxmi Publications

Subject Code: EEE103302	Electrical Circuit Analysis	L= 2	T = 1	P = 0	Credits= 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. To make the students capable of analyzing any given electrical circuit. 2. Student will be able to evaluate circuit parameters using theorems. 3. Students will be able to study the impact of resonance on network voltage and current magnitudes. 4. Students will have knowledge of balanced and unbalanced poly phase circuits. 5. Students will be able to analyze the behavior of non-sinusoidal waveforms	On successful completion of the course, the studentwill be able to: CO1: Apply the knowledge of basic electric circuit concepts. CO2: Analyze the circuit using circuit simplification theorems. CO3: Infer and evaluate coupled circuits and networkperformance under resonance condition. CO4: Analyze three phase balanced and unbalanced polyphase CO5: Analyze and evaluate the power calculations forsteady state sinusoidal waveforms.

Unit-I Circuit Elements: CO1

Active and passive elements, Concept of ideal and practical sources, electrical resistance (Ohm's law), Kirchoff's laws, voltage division and current division, power and energy, Source transformation and Source shifting, Concept of Mesh, Super-Mesh, node and Super node analysis, star – delta transformation, Duality [8 Hrs]

Unit-II Techniques of Circuit Analysis: CO2

Super Position theorem, Reciprocity theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem and Millman's theorem, Analysis of networks with and without dependent AC and DC sources. [7 Hrs]

Unit-III Magnetic and Resonant Circuits: CO3

Self inductance – Mutual inductance – Dot rule – Coefficient of coupling – Analysis of multiwinding coupled circuits – Series, Parallel connection of coupled inductors ,Analysis of simple series RLC and parallel RLC circuits under resonance, Problems on Resonant frequency, Bandwidth and Quality factor at resonance [7 Hrs]

Unit-IV Three-Phase Circuits CO4

Balanced and Unbalanced three-phase voltages; three-phase voltage sources; analysis of Wye-Wye and Wye-Delta circuits; power calculations in balanced three-phase circuits. [7 Hrs]

Unit-V Sinusoidal Steady-State Power Calculations CO5

Instantaneous power; average and reactive power; root-mean-square (rms); complex power; power calculations. [7 Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Engineering Circuit Analysis	Hayt W. H., Kemmerly J. E. and Durbin S. M.	Tata McGraw-Hill Publishing Company Ltd
2)	Fundamentals of Electric Circuits	C. Alexander and M.Sadiku	McGraw-Hill
3)	Network Analysis and Synthesis	Kuo F. F.	Wiley India

Reference Books:

S. No.	Title	Authors	Publisher
1)	Networks and Systems	D. Roy Choudhury	New Age International Publications
2)	Circuit Theory	A. Chakraborty	Khanna Publications
3)	Circuit theory	Kuriakose	PHI Learning Publications.

Subject Code: EEE103303	Electrical Machine- I	L= 3	T = 0	P = 0	Credits= 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. The objective of this course is to expose the studentson basic knowledge of construction and working of various transformers their equivalent circuit, parameter determination and applications. 2. This course also provides the knowledge of direct current electrical machines, its operational constraints, starting mechanisms, conventional speed control methods, various tests and applications.	On successful completion of the course, the studentwill be able to: CO1:-. Understand the fundamentals and working of transformers CO2:- Draw the equivalent circuit diagrams of various transformers CO3:-Analyse the load profile, voltage regulations and efficiency under various operating conditions CO4:-Understand the working principle and constructionof direct current machines CO5:- Understand the needs and requirements of various types of d.c. machine operations like starting, speed control, tests etc.

UNIT– I Single Phase Transformer: CO1

Introduction, Constructional features of a transformer, core and shell type, working principle of a transformer, EMF equation, Ideal transformer, Actual transformer on no-load and on load, phasor diagram (no load, unity, lagging and leading power factor), Equivalent circuit, per unit representation, Voltage regulation of a transformer, Losses in a transformer, separation of losses, Open circuit and short circuit test, Efficiency, condition for maximum efficiency. [8 Hrs]

UNIT– II Single Phase Transformer and Auto-transformer: CO2

All-day efficiency, Back-to-Back test, power and distribution transformer, Polarity test, Parallel operation of single-phase transformer (equal and unequal voltage ratios). Auto-transformer, its equivalent circuit and phasor diagram, its comparison with two winding transformer, conversion from auto- transformer to two winding transformer and vice versa. [7 Hrs]

UNIT– III Three Phase Transformer: CO3

Three-phase transformers, constructional details, Bank of three single phase units, three phase single unit transformer, different connections (star-star, star-delta, Delta-star, Delta-delta) and vector groups, Conditions for parallel operation of three phase transformers, Scott connection, open delta connection, principle (only) of working of a three winding transformer andits applications. [7 Hrs]

UNIT– IV DC Machine –I CO4

BLV and BLI concept, constructional details, production of voltage and torque, classification of DC machine, armature reaction and its effect, methods to reduce armature reaction, commutation, methods of improving commutation, effect of brush shift, Types of generators, condition of self excitation, critical speed and critical resistance of shunt generator. [7 Hrs]

UNIT– V DC Machine –II: CO5

Electrical and mechanical characteristics of DC motor, starters for shunt motors- three point and four point starter, speed control of DC motors- armature and field control method, losses in DC machines, efficiency and condition for maximum efficiency, Testing of DC machines- Swinburne's test and Regenerative test(Study only). [7 Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Electric Machines	Nagrath & Kothari	TMH Publications
2)	Electrical Machinery	P. S. Bimbhra	Khanna Publishers
3)	Electric Machines	P.K. Mukherjee & S. Chakravarti	Dhanpat Rai Publication

Reference Books:

S. No.	Title	Authors	Publisher
1)	Theory & Performance of Electrical Machines	J. B. Gupta	S. K. Kataria & Sons
2)	Electric Machines	Ashfaq Hussain	Dhanpat Rai Publication
3)	Electrical Machines	Samarjeet Ghosh	PHI

Subject Code: EEE103304	Solid State Devices	L= 3	T = 0	P = 0	Credits= 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. To explain the basic concepts of semiconductors, electronics devices and their characteristics. 2. To explain working principle and operation of solid state rectifiers, transistors and feedback circuits.	On successful completion of the course, the studentwill be able to: CO1:-Characterize diodes based on their characteristics and applicability. CO2:-Utilize diodes in rectifier circuits, filters and voltage regulators. CO3:- Learn to design transistor biasing circuit and calculating its stability. CO4:- Design characteristics of FET and MOSFET. CO5:- Design and develop feedback and oscillators circuits.

UNIT– I Review of Diode Fundamentals: CO1

Formation of P-N Junction Diode, Properties of P-N Junction, Diodes characteristics, Diode equation, Effect of Temperature on V-I Characteristics, Ideal Diode, Diode Capacitance: Transition and Diffusion Capacitance. [8 Hrs]

UNIT– II Diode Applications: CO2

Rectifiers: Half wave and full wave bridge rectifier circuit. Filters: Capacitor filter, LC, CLC filters. Clipper and its types, clamper and its types, Zener diode: breakdown Mechanism, characteristic, Zener diode as voltage regulator. [7 Hrs]

UNIT– III Bipolar Junction Transistors: CO3

Review of transistor fundamentals, Input and output characteristics of transistor circuits, Early Effect. Transistor Biasing, Purpose of biasing, dc operating point, dc load line, different biasing techniques – Base bias, Emitter bias, Voltage divider bias, Collector feedback bias, Thermal Runaway, Thermal stability, Introduction of h-parameters. [7 Hrs]

UNIT– IV FET & MOSFET CO4

Introduction, Construction, operation, JFET V-I characteristics, FET small signal model, depletion mode MOSFET, enhancement mode MOSFET, low frequency common source and common drain amplifiers, FET biasing, FET as a voltage variable resistor, MOSFET as a switch. [7 Hrs]

UNIT– V Feedback amplifier and oscillators CO5

Feedback amplifier: Types of amplifier, feedback concept, characteristics of negative feedback, feedback topologies.

Oscillator: Types of oscillators, Barkhausen criteria for oscillation, RC phase shift Oscillator, Wien Bridge Oscillator, LC Oscillator, Crystal Oscillator. [7 Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Integrated Electronics: Analog & Digital Circuit Systems	Jacob Millman & Halkias	TMH
2)	Electronic Devices & Circuit Analysis	K. Lal Kishore	BS Publications
3)	Solid State Electronic Devices	B. G. Streetman and S. K. Banerjee	Prentice Hall India

Reference Books:

S. No.	Title	Authors	Publisher
1)	Electronic Devices and Circuit Theory	Boylestad & Nashelsky	PHI
2)	Microelectronics	Millman and Grabel	TMH Publications
3)	Electronic Devices & Circuits	David A. Bell	PHI

Subject Code: EEE103305	Fundamental of Electrical Power Generation and Renewable Engineering	L= 3	T = 0	P = 0	Credits= 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
The objective is to make the students able- 1. To provide the students with a broad understanding of predictions of different load demands of the consumers. Student will understand the layout diagrams of power system by drawing the typical load curves. 2. To provide the students with a broad understanding of all types of electricity generation operation and major components of electric generating plants. 3. To understand the application of solar PV system and different types of Solar Collectors. 4. Students will understand the various components of Wind Energy Conversion system with its application. 5. Students will have a basic understanding of other energy conversions i.e. MHD, Tidal, Ocean, geothermal, and Biomass energy to electrical energy.	On successful completion of the course, the student will be able to: CO1:- Extract features that can be used for a particular machine learning approach in various IOT CO2:- To compare and contrast pros and cons of various machine learning techniques and to get an CO3:- Obtain I-V characteristics and performance analysis of Solar cell/module/Array modelling. CO4:- Identify various components of Wind Energy Conversion system. CO5:-Differentiate other non-conventional energy: MHD, Geothermal, Tidal power, Ocean thermal energy, and Biomass power plants. .

UNIT – I CO1

Introduction: Sources of energy, comparison of sources of energy, Growth of power generation in India, need for nonconventional energy sources.

Prediction of Load: Definition of connected load, maximum load, maximum demand, demand factor, load factor, diversity factor, plant capacity factor, plant utilization factor, load duration curve, mass curve. Calculation based on above factors. [8 Hrs]

UNIT –II CO2

Thermal Power generation : Main parts and working of thermal power station, main features of boilers, steam turbines, Auxiliaries, coal preparation , Ash Handling and layout of thermal power station.

Hydro Power Stations: Hydrology, hydrographs, flow duration & mass curve, main types of dams, turbines & generators, pumped storage plant.

Nuclear power Generation: Principles of nuclear power generation, main parts of nuclear power plants, types of reactors, nuclear waste hazards & disposal.

UNIT-III CO3

Solar Energy: solar radiation, solar collectors, conversion of solar energy in to electrical energy , solar water heater ,solar hydrogen energy cycle.

Photovoltaic Power Conversion systems: Solar Photovoltaic(SPV) systems, Operating principle , Photovoltaic cell concepts , Types of solar cells, fabrication of SPV cells , Cell, module, array (Series and parallel connections) , SPV system components and their characteristics, applications, Block diagram of general SPV system , Applications of Solar Photovoltaic systems [7 Hrs]

UNIT – IV CO4

Wind energy: Site selection considerations, wind power plants: principles of wind power generation, wind turbine operation & control,Comparison/ advantages and disadvantages of WECS. [7 Hrs]

UNIT – V CO5

MHD Generation: principle of MHD generation, MHD cycles & working fluids, open cycles & closed cycle MHD system, merits &demerits. Other methods of power generation: Tidal power generation, Ocean Thermal energy, Geothermal power generation, Biomass applications in power generation, use of different types of generation for base loads/peak loads. [7 Hrs]

Text Books:

S.No.	Title	Authors	Publisher
1)	Generation of electrical energy	BR Gupta	S. Chand Publications
2)	Generation & Economic consideration	JB Gupta	S.K. Kataria Publications
3)	Non-conventional Energy Sources	G D Rai	Khanna Publications.
4)	Non-conventional Energy Resources	B.H.Khan	2nd Edition Tata McGrawhill PVT, New-Delhi

Reference Books:

S. No.	Title	Authors	Publisher
1)	A Text book of Power System Engineering	A. Chakrabarti, M. L Soni, P. V. Gupta, U. S. Bhatnagar	Dhanpat Rai Publication
2)	Renewable Energy Technologies	Solanki, Chetan S	PHI Learning, New Delhi, 2011
3)	A Course in Electrical Power	J.B. Gupta	S K Kataria Publications
4)	Biomass to Renewable Energy Processes	Jay Cheng	1st Edition, CRC press, 2009.
5)	Solar Energy-Principles of Thermal Collection & Storage	S P Sukhatme	Tata McGraw Hill Publishing Company Ltd.,New Delhi.

Subject Code:EEE103391	Electrical Circuit Analysis lab	L = 0	T = 0	P =2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	--	25	50	--

List of Experiments: **[24 Hrs]**

1. To plot voltage vs resistance characteristics of Incandescent lamp.
2. To calculate the value of resistor using color coding and verify it through measurement.
3. To study the different functions of a Analog/Digital multimeter.
4. To verify Superposition theorem for DC/AC Circuits.
5. To verify Thevenins theorem for DC/AC Circuits.
6. To verify Norton's theorem for DC/AC Circuits.
7. To verify Reciprocity theorem for DC/AC Circuits.
8. To verify Millman's theorem for DC/AC Circuits.
9. To connect a tube light and study its min. operating voltage, nature of current, power and power factor.
10. To Measure Q Factor of Series RLC Circuit
11. To Measure Q Factor of Parallel RLC Circuit
12. To verify the voltage and current relation in star and delta connected three phase system.
13. To verify the effect of three phase unbalanced star connected system.
14. To measure three phase power using Two-watt meter method.

Equipment/Machines/Instruments/Tools/Software Required:

Voltmeter, ammeter, Wattmeter, Power factor meter, Resistors, Capacitors, Lamp load, DC supply,Three-phaseautotransformer, Multimeter, Simulation tools like MATLAB,PSIM, MULTISIM .

Subject Code: EEE103392	Electrical Machine-I Lab	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	--	25	50	--

List of Experiments: [24 Hrs]

1. To determine the equivalent circuit parameters of a single phase transformer.
2. To determine the voltage regulation of a single phase transformer operating at lagging and Unity Power Factor condition.
3. To determine the efficiency of a single phase transformer under different loading conditions
4. To perform the tests required for parallel operation of transformers.
5. To perform parallel operation of two single phase transformer.
6. To study the voltage/current ratios for different types of three phase transformer connection.
7. To perform Back to Back test on two single phase transformer.
8. To perform 3- phase to 2- phase conversion (Scott connection)
9. To study the various routine tests performed on three phase transformers as per IS code.
10. To determine the armature & field winding resistance of D.C machine by voltmeter/ammeter method.
11. To determine the magnetization or Open circuit characteristics of a D.C machine
12. To perform load test on D.C shunt generator.
13. To perform Swinburne's test a D.C machine & calculate its efficiency at full load operating condition.
14. To study three point and four point motor starters and observe its impact on the motor staring current.
15. Speed control of D.C shunt motor by (a) Varying field current with armature voltage kept constant; (b) Varying armature voltage with field current kept constant.
16. To study the reversal of D.C shunts motor.

Subject Code : EEE103393	Solid State Devices lab	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	--	25	50	--

List of Experiments: [24 Hrs]

1. To draw VI characteristics of P-N Junction diode.
2. To study characteristics of Zener diode.
3. To study the application of Zener diode as voltage regulator.
4. To study the Half wave rectifier and calculate Voltage Regulation, Ripple Factor and DC output voltage.
5. To study the Full wave rectifier and calculate Voltage Regulation, Ripple Factor and DC output voltage.
6. To study the Bridge rectifier and calculate Voltage Regulation, Ripple Factor and DC output voltage.
7. To study output waveform and transfer characteristics of clipper circuit.
8. To study output waveform and transfer characteristics of clamper circuit.
9. To draw input and output characteristics of Transistor in Common Emitter configuration.
10. To study the drain and transfer characteristics of JFET.
11. To study the drain and transfer characteristics of MOSFET.
12. To Design 5V/12 V regulated DC power supply.

Subject Code: EEE103394	Mini Project-I/ Electrical Workshop-I	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	--	25	50	--

List of Experiment: **[**24 Hrs]

1. Hands on training of all major tools / Accessories used in electrical workshop. (Symbols &abbreviations, Safety instructions are also to be explained during first visit to lab.)
2. Stair Case Wiring.
3. Replace the old element for heater, kettle, non–automatic electronic iron, room heaters etc., with a new one. And test the appliance to ensure proper functioning and safety against shock.
4. Dismantle and reassemble an electric iron, heater, kettle, room heater, toaster, hair dryer, mixie etc. (Minimum 4 appliances)
5. Install a ceiling fan and the regulator. (Group of Two/ Three student may perform the task but each student should practice to connect the wires in ceiling rose.)
6. Check a fluorescent lamp, choke, starter and install it. (About 5 defective tube-light set are to be provided with different type of faults. Student must be able to identify the fault and troubleshoot it.)
7. Godown Wiring.
8. House Wiring.
9. Measurement of Energy Meter in 1 Ø.
10. Removal of insulation and fixing of various types of lugs in wire / cable using Crimping tool.
11. Preparation of various types of joints for flexible conductor and ACSR Conductor
12. Working of RCCB wiring connection.
13. Assemble and test rectifier circuits – half wave, full wave & bridge rectifier and test the input /output waveform on CRO.
14. To provide service connection for industrial installation (3 phase- 4 Wire)
15. Visit to nearby leading Motor Rewinding workshop and observing various repairing and testing activities).

Subject Code HSMC -	Health, Hygiene and Yoga	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	---	--	25	25	---

COURSE OBJECTIVES

- **To provide understanding and importance of health**
- **To provide insight into the hygiene aspect and quality of lifestyle**
- **To study the concepts of various medical therapy**
- **To practice different types of yogasan and pranayama.**
- **To provide knowledge about common diseases and its cure through yogasan and pranayama.**
- **To develop and improve concentration through various methods**

COURSE OUTCOMES

On successful completion of the course, the student will be able to:

- **Demonstrate a better understanding about mental and physical health for human life**
- **Understand the correlation of mental and physical health with hygiene and yoga**
- **Demonstrate the understanding about the health hazards resulting due to improper lifestyle**
- **Display understanding about eminent yogis and primary texts on yoga**
- **Apply various techniques of yoga to counter various lifestyle issues**
- **Understand the utility of health, hygiene and yoga for society welfare**

UNIT – I CO1

(A) Health:

- Concept of Health – Physical and Mental Health and Wellbeing
- Meaning and definition of Health according to WHO and Ayurveda Charaksamhita
- Primary Health Care –Food, Nutrition and Cleanliness
- Human Psychology and Health Consciousness

(B) Hygiene:

- Meaning, definition and importance of Hygiene in life
- Types of Hygiene and general rules for Hygiene and Cleanliness
- Ayurveda: Ayurveda, Vata, Pitta and Cough

UNIT – II CO2

(A) Medicinal Cure:

- Introduction and basic concepts of common streams of medicinal cure
- Introductory knowledge about modes of operation of Alopathy, Ayurveda, Homoeopathy, Bio-chemic, Unani, Siddha, Acupressure, Acupuncture and Naturopathy
- Introduction of Anatomy and Physiology concerned

(B) Occupational Health:

- Diseases and their occupational relevance, risk factors for deficiency diseases
- Drugs, Tobacco, Alcohol and Food intoxication: chemical agents, side effects and control measures
- Stress, anxiety, depression and emotional imbalance: causes and prevention

(C) Modern Silent Killers:

- High blood pressure, diabetes and cancer – causesand cure
- Common health problems due to stomach disorders such as indigestion, acidity, etc.

UNIT – III CO3

(A) Yogasans:

- Meaning, concept and importance of Yoga for healthy life
- Yogasans and its mode of operation, Prone and Supine Posture
- Common Yogasans such as Bhujangasan, Halasan, Padmaasan, Sarvangasan, Shavasan, Surya Namaskar, Utshep Mudra, Vajrasan, Jal-Neti, etc.
- Asans for Brain: Shirshpadasan, Shashankasan
- Asans for Eye Sight: Tratak, Neti-Kriya

(B) Yogis and Yogic Texts:

- Ashtang yoga from Patanjali Yoga Sutra
- Somantic and Psychosomatic from YogVashishth
- BhagwadGeeta
- Basic knowledge of Shat Darshan

UNIT – IV CO4

(A) Pranayama:

- Definition, concept and types of Pranayama
- NadiShodhan, AnulomVilom, Bhastrika, Bhramari,Shitakari, etc.
- Usefulness of Pranayamafor students
- Introduction to Kumbhak

(B) Meditation:

- Basic concept of Meditation
- Concentration of mind: Dhyan
- Concentration on breath; Japa, Ajapajap, Internal Silence
- Concentration on point of light, Concentration on feeling, Concentration on figure
- Visualization in mental sky

UNIT – V CO5

Social Awareness and Community Health:

- NSS / NCC activities for society and nation
- Health and family welfare
- Nutrition and welfare programmes for childs, elders and divyangs
- Blood Donation and health check-up campaign
- Green environment campaign - Plantation
- Co-management of HIV and TB diseases
- Gender Equity and National Integrity
- Natural calamities and Disaster Management
- Road safety awareness, Swachhataa awareness, etc.

Text Books:

S. No.	Title	Authors	Publisher
1)	Health, Hygiene & Yoga	Dr P. B. Deshmukh	Gyan Book Private Ltd. New Delhi
2)	Health, Hygiene and Yoga	Dr. Manju Shukla	Gyan Book Private Ltd. New Delhi

Reference Books:

S. No.	Title	Authors	Publisher
1)	Asan Pranayama Mudrabandha	Swami Satyananda Saraswati	Yoga Publication Trust, Munger (Bihar)
2)	Fundamentals of Yogic Practices - A Complete Guide on Yoga	Shrikant, R. Kushwah, Y. Kushwah	KhelSahitya Kendra, Delhi

Subject Code (IT100396)	CYBER LAWS & ETHICS	L	T	P	Credits=0
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	-	-	25	25	--

Course Objectives	Course Outcomes
1. To explore brief idea about the CYBER LAWS. 2. To get the basic idea about IT ACT. 3. Awareness about ecommerce and related cyber laws. 4. Awareness regarding Trademarks, Copyrights and Patents. 5. Awareness regarding Cyber Ethics.	**After the completion of course, student will be** **CO 1**. Understand Cyber laws **CO 2**. Understand IT Act. **CO 3**.Describe Information Technology act and Related Legislation. **CO 4**. Demonstrate Electronic business and legal issues. **CO 5**. Interpret Cyber Ethics.

UNIT – I: Introduction to Cyber law: CO1

Evolution of computer Technology, emergence of cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace Web space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

UNIT – II: Information Technology Act: CO2

Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

UNIT – III: Cyber law and Related Legislation: CO3

Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code.

UNIT – IV: Electronic Business and legal issues: CO4

Evolution and development in E-commerce, paper vs paper less contracts E-Commerce models-B2B, B2C, E security. Business, taxation, electronic payments, supply chain, EDI, E-markets, Emerging Trends.

UNIT-V: Cyber Ethics: CO5

The Importance of Cyber Law, Significance of cyber Ethics, Need for Cyber regulations and Ethics. Ethics in Information society, Introduction to Artificial Intelligence Ethics: Ethical Issues in AI and core Principles, Introduction to Block chain Ethics

Text Books:

S.No.	Title	Authors	Publisher
1)	Cyber Laws: Intellectual property & E Commerce, Security	Kumar K	dominant Publisher
2)	Cyber Ethics 4.0, Christoph Stuckelberger	Pavan Duggal	Globethic
3)	Information Security policy & Implementation Issues	NIIT	PHI
4)	Computers, Internet and New Technology Laws	Karnika Seth	Lexis Nexis Butterworths Wadhwa Nagpur

Reference Books:

S.No.	Title	Authors	Publisher
1)	Legal Dimensions of Cyber Space	Verma S, K, MittalRaman	Indian Law Institute, New Delhi
2)	Cyber Law	JonthanRosenoer	Springer, New York, (1997)
3)	The Information Technology Act 2005	A Handbook	OUP Sudhir Naib,, New York, (2011)
4)	Information Technology Act, 2000	S. R. Bhansali	University Book House Pvt. Ltd., Jaipur (2003)
5)	Cyber Crimes and Law Enforcement	Vasu Deva	Commonwealth Publishers, New Delhi, (2003)