POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-301
Course Title	Renewable Energy Power Plants
Number of Credits	4 (L:3; T:1; P:0)

Course objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences: Maintain the efficient operation of various types of renewable energy power plants.

Course outcomes:

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Maintain the optimised working of solar PV and CS power plants.
b) Maintain the optimised working of large wind power plants
c) Maintain the optimised working of small wind turbines.
d) Maintain the optimised working of micro hydro power plants.
e) Maintain the optimised working of biomass-based power plants.

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UNIT 1

Understanding Solar Map of India: Global solar power radiation, Solar PV Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors Solar Photovoltaic (PV) power plant: components layout, construction, working

UNIT 2

Wind Map of India: Wind power density in watts per square meter Lift and drag principle; long path theory. Geared type wind power plants: components, layout and working. Direct drive type wind power plants: components, layout and working. Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG), Wound Rotor Induction Generator (WRIG); Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG).

UNIT 3

Horizontal axis small wind turbine: direct drive type, components and working Horizontal axis small wind turbine: geared type, components and working Vertical axis small wind turbine: direct drive and geared, components and working Types of towers and installation of small wind turbines on roof tops and open fields. Electric generators used in small wind power plants

UNIT 4

Energy conversion process of hydro power plant. Classification of hydro power plant: High, medium and low head.
Layouts of micro-hydro power plants Construction and working of hydro turbines used in different types of hydro power plant:

o High head – Pelton turbine
o Medium head – Francis turbine
o Low head – Kaplan turbine.

Safe Practices for micro hydro power plants.

UNIT 5

Different Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
Properties of liquid and gaseous fuel for biomass power plants: Jatropha, bio-diesel gobar gas Layout of a Bio-chemical based (e.g. biogas) power plant: Layout of a Thermo-chemical based (e.g. Municipal waste) power plant Layout of a Agro-chemical based (e.g. bio-diesel) power plant

Reference Books:

1 Rachel, Sthuthi; Earnest, Joshua – Wind Power Technologies, PHI Learning, New Delhi, ISBN: 978-93-88028-49- 3; E-book 978-93-88028-50-9
2. David M. Buchla, Thomas E. Kissell, Thomas L. Floyd - Renewable Energy Systems, Pearson Education New Delhi , ISBN: 9789332586826,
3. Deambi, Suneel: From Sunlight to Electricity: a practical handbook on solar photovoltaic application; TERI, New Delhi ISBN:
4. Khoiyangbam, R S Navindu; Gupta and Sushil Kumar; Biogas Technology: Towards Sustainable Development; TERI, New Delhi; ISBN: 9788179934043
5. Gipe, Paul: Wind Energy Basics, Chelsea Green Publishing Co; ISBN: 978-1603580304
6. Wizelius, Tore &Earnest, Joshua -PHI Learning, New Delhi, ISBN: 978-8120351660
7. Bhadra, S.N., Kastha, D., Banerjee, S, Wind Electrical Systems installation; Oxford University Press, New Delhi, ISBN: 9780195670936.
8 O.P. Gupta, Energy Technology, Khanna Publishing House, New Delhi (ISBN: 978-9386173-683)

9 Kothari, D.P. et al: Renewable Energy Sources and Emerging Technologies, PHI Learning, New Delhi, ISBN: -978-81-203-4470-9

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-302
Course Title	Electric Motors and Transformers
Number of Credits	4 (L:3; T:1; P:0)

Course objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences: Maintain electric motors and transformers.

Course outcomes:

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency: a) Maintain different types of DC generators.

Unit – I DC Generators

Construction, parts, materials and functions of DC generator: Principle of operation of DC generator: Fleming's right hand rule, schematic diagrams, e.m.f. equation of generator, armature reaction, commutation and. Applications of DC generators. Classification of measuring instruments: indicating, recording and integrating instruments

Unit – II D.C. Motors

DC motor: Types of DC motors. Fleming's left hand rule, Principle of operation of, Back e.m.f.and its significance, Voltage equation of DC motor.Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency. DC motor starters: Necessity, two point and three point starters.Speed control of DC shunt and series motor: Flux and Armature control.Brushless DC Motor: Construction and working

Unit– III Single Phase Transformers

Types of transformers: Shell type and core type; Construction: Parts and functions, materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores, Transformer: Principle of operation, EMF equation of transformer: Derivation, Voltage transformation ratio, Significance of transformer ratings Transformer No-load and on-load phasor diagram, Leakage reactance, Equivalent circuit of transformer: Equivalent resistance and reactance. Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency.

Unit– IV Three Phase Transformers

Bank of three single phase transformers, Single unit of three phase transformer Distribution and Power transformers. Construction, cooling, Three phase transformers connections as per IS:2026 (part IV)-1977, Three phase to two phase conversion (Scott Connection), Selection of transformer as per IS: 10028 (Part I)-1985, Criteria for selection of distribution transformer, and power transformer, Amorphous Core type Distribution Transformer, Specifications of three-phase distribution transformers as per IS:1180 (part I)-1989 Need of parallel operation of three phase transformer, Conditions for parallel operation. Polarity tests on mutually inductive coils and single phase transformers; Polarity test, Phasing out test on Three-phase transformer

Unit– V Special Purpose Transformers

Single phase and three phase auto transformers: Construction, working and applications. Instrument Transformers: Construction, working and applications of Current transformer and Potential transformer. Isolation transformer: Constructional Features and applications. Single phase welding transformer: constructional features and applications. Pulse transformer: constructional features and applications. 'K' factor of transformers: overheating due to non-linear loads and harmonics

Reference Books:

References:

1. G.C. Garg & P.S. Bimbhra, Electrical Machines, Vol-I, II, Khanna Book Publishing House (ISBN: 978-9386173-447, 978-93-86173-607), New Delhi
2. Mittle, V.N. and Mittle, Arvind., Basic Electrical Engineering, McGraw Hill Education, New Delhi, ISBN: 9780070593572
3. Kothari, D. P. and Nagrath, I. J., Electrical Machines, McGraw Hill Education. New Delhi,ISBN: 9780070699670
4. Bhattacharya, S. K., Electrical Machines, McGraw Hill Education, New Delhi, ISBN: 9789332902855
5. Mehta, V. K. and Mehta, Rohit, Principles of Electrical Machines, S. Chand and Co. Ltd., New Delhi, ISBN: 9788121930888
6. Theraja, B.L., Electrical Technology Vol-II (AC and DC machines), S. Chand and Co. Ltd., New Delhi, ISBN: 9788121924375
7. Bandyopadhyay, M. N., Electrical Machines Theory and Practice, PHI Learning Pvt. Ltd., New Delhi, ISBN: 9788120329973 Vi
8. Murugesh Kumar, K., DC Machines and Transformers, ISBN: 9788125916055

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-303
Course Title	Introduction to Electric Generation Systems
Number of Credits	3 (L:3; T:0; P:0)

Course Objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences: Maintain the efficient operation of various electric power generating plants.

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Course Outcomes:

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Maintain the optimised working of the thermal power plant.
b) Maintain the optimised working of large and micro hydro power plants.
c) Maintain the optimised working of solar and biomass-based power plants.
d) Maintain the optimised working of wind power plants.
e) Select the adequate mix of power generation based on economic operation.

Unit – I Thermal Power Plants: Coal, Gas/ Diesel and Nuclear-based

Layout and working of a typical thermal power plant with steam turbines and electric generators. Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal, Gas/ diesel, Nuclear fuels –fusion and fission action Safe Practices and working of various thermal power plants: coal-based, gas-based, diesel-based, nuclear-based. Functions of the following types of thermal power plants and their major auxiliaries: Coal fired boilers: fire tube and water tube. Gas/diesel based combustion engines Types of nuclear reactors: Disposal of nuclear waste and nuclear shielding. Thermal power plants in Maharashtra.

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Unit – II Large and Micro-Hydro Power Plants

Energy conversion process of hydro power plant. Classification of hydro power plant: High, medium and low head. Construction and working of hydro turbines used in different types of hydro power plant:

a. High head – Pelton turbine
b. Medium head – Francis turbine
c. Low head – Kaplan turbine.

Safe Practices for hydro power plants.Different types of micro- hydro turbines for different heads: Pelton, Francis and Kaplan turbines Locations of these different types of large and micro-hydro power plants in Maharashtra Potential locations of micro-hydro power plants in Maharashtra.

Unit– III Solar and Biomass based Power Plants

Solar Map of India: Global solar power radiation. Solar Power Technology

a. Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
b. Solar Photovoltaic (PV) power plant: layout, construction, working.

Biomass-based Power Plants

a. Layout of a Bio-chemical based (e.g. biogas) power plant:
b. Layout of a Thermo-chemical based (e.g. Municipal waste) power plant
c. Layout of an Agro-chemical based (e.g. bio-diesel) power plant

Features of the solid, liquid and gas biomasses as fuel for biomass power plant.

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Unit– IV Wind Power Plants

Wind Map of India**:** Wind power density in watts per square meter Layout of Horizontal axis large wind power plant: Geared wind power plant. Direct-drive wind power plant. Salient Features of electric generators used in large wind power plants: Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG),
Wound Rotor Induction Generator (WRIG) Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG)

Unit– V Economics of Power Generation and Interconnected Power System

Related terms: connected load, firm power, cold reserve, hot reserve, spinning reserve. Base load and peak load plants; Load curve, load duration curve, integrated duration curve Cost of generation: Average demand, maximum demand, demand factor, plant capacity factor, plant use factor, diversity factor, load factor and plant load factor.
Choice of size and number of generator units, combined operation of power station. Causes and Impact and reasons of Grid system fault: State grid, national grid, brownout and black out; sample blackouts at national and international level

References:

1. Nag. P. K.Power Plant Engineering, McGraw Hill, New Delhi, ISBN: 978-9339204044
2. Tanmoy Deb, Electrical Power Generation, Khanna Publishing House, Delhi (Ed. 2018)
3. Gupta, B.R., Generation of Electrical Energy, S. Chand& Co. New Delhi,
4. Rachel, Sthuthi; Earnest, Joshua **–** Wind Power Technologies, PHI Learning, New Delhi, ISBN: 978-93-88028-49- 3; E-book 978-93-88028-50-9
5. Solanki, Chetan Singh, **–** Solar Photovoltaics: Fundamentals, Technologies and Applications, PHI Learning, New Delhi, ISBN: 9788120351110
Electrical Engineering Curriculum Structure 138
6. Hau**,** Erich, Wind Turbines, Springer-Verlag, Berlin Heidelberg, Germany, ISBN:978-3-642-27150-2
7. Gipe, Paul, Wind Energy Basics, Chelsea Green Publishing Co; ISBN: 978-1603580304
8. Wizelius, Tore; Earnest, Joshua **–** Wind Power Plants and Project Development, PHI
9. Gupta, J.B. A Course in Electrical Power**–** S. K Kataria and Sons, New Delhi. 2014,
10. Soni, Gupta, Bhatnagar, A Course in Electrical Power. **–** Dhanpatrai and Sons
11. System, S.Chand & Co. New Delhi, 2005, ISBN: 9788121924962.

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-303
Course Title	Introduction to Electric Generation Systems Lab
Number of Credits	1 (L:0; T:0; P:2)

List of practical to be performed:

1. Identify the routine maintenance parts of the coal fired thermal power plant after watching a video programme
2. Identify the routine maintenance parts of the gas fired thermal power plant after watching a video programme
3. Assemble and dismantle a small diesel generator power plant.
4. Identify the routine maintenance parts of the nuclear fired thermal power plant after watching a video programme.
5. Identify the routine maintenance parts of the large hydro power plant after watching a video programme
6. Identify the routine maintenance parts of the micro hydro power plant after watching a video programme.
7. Assemble a micro hydro power plant and then dismantle it.
8. Assemble the parabolic trough or parabolic dish Concentrated Solar Power (CSP) plant.
9. Dismantle the parabolic trough or parabolic dish CSP plant.
10. Assemble the solar PV plant to produce electric power and then dismantle it.
11. Assemble a small biogas plant to generate electric power
12. Dismantle the biogas plant.

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-304
Course Title	Electrical Circuits
Number of Credits	3 (L:3: T:0: P:0)

Course Objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences: Maintain electrical systems applying AC and DC circuit fundamentals

Course Outcomes:

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Troubleshoot problems related to single phase A.C series circuits.
b) Troubleshoot problems related to single phase A.C parallel circuits.
c) Troubleshoot problems related to three phase circuits.
d) Use principles of circuit analysis to troubleshoot electric circuits.
e) Apply network theorems to troubleshoot electric circuits.

Unit – I Single Phase A.C Series Circuits

Generation of alternating voltage, Phasor representation of sinusoidal quantities R, L, C circuit elements its voltage and current response R-L, R-C, R-L-C combination of A.C series circuit, impedance, reactance, impedance triangle, Power factor, active power, reactive power, apparent power, power triangle and vector diagram Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, RL-C circuit

Unit – II Single Phase A.C Parallel Circuits

R-L, R-C and R-L-C parallel combination of A.C. circuits. Impedance, reactance, phasor diagram, impedance triangle R-L, R-C, R-L-C parallel A.C. circuits power factor, active power, apparent power, reactive power, power triangle Resonance in parallel R-L, R-C, R-L-C circuit, Bandwidth, Quality factor and voltage magnification

Unit– III Three Phase Circuits

Phasor and complex representation of three phase supply Phase sequence and polarity Types of three-phase connections, Phase and line quantities in three phase star and delta system Balanced and unbalanced load, neutral shift in unbalanced load Three phase power, active, reactive and apparent power in star and delta system.

Unit– IV Network Reduction and Principles of Circuit Analysis

Source transformation Star/delta and delta/star transformation Mesh Analysis Node Analysis

Unit– V Network Theorems

Superposition theorem. Thevenin's theorem. Norton's theorem Maximum power transfer theorem Reciprocity theorem Duality in electric circuits

Reference Books:

1. Ashfaq Husain, Networks & Systems, Khanna Book Publishing, New Delhi.
2. Gupta, B.R; Singhal, Vandana;, Fundamentals of Electrical Network, S.Chand and Co., New Delhi, ISBN : 978-81-219-2318-7
3. Saxena, S.B Lal; Dasgupta, K; Fundamentals of Electrical Engineering, Cambridge University Press Pvt. Ltd., New Delhi, ISBN : 978-11-0746-435-3
4. Theraja, B. L. : Theraja, A. K;, A Text Book of Electrical Technology Vol-I, S. Chand & Co. Ramnagar, New Delhi, ISBN : 9788121924405
5. Sudhakar, A. ; Shyammohan, S. Palli; Circuit and network, McGraw Hill Education, New Delhi, ISBN : 978-93-3921-960-4
6. Bell, David A., Electric Circuits, Oxford University Press New Delhi, ISBN : 978-01-954-2524-6
7. Boylested, R.L., Introductory circuit Analysis, Wheeler, New Delhi,ISBN: 978-00-231-3161-5
8. Mittle, V.N. ;Mittle, Arvind; Basic Electrical Engineering, McGraw Hill Education, Noida, ISBN: 978-00-705-9357-2
9. Sivanandam, S.N, Electric Circuit Analysis, Vikas Publishing House Pvt. Ltd, Noida, ISBN:978- 81259-1364-1
10. Salivahanan, S.; Pravinkumar, S; Circuit theory, Vikas Publishing House Pvt. Ltd, Noida; ISBN:978-93259-7418-0

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-304
Course Title	Electrical Circuits Lab
Number of Credits	1 (L:0; T:0; P:2)

List of practical to be performed:

1. Use dual trace oscilloscope to determine A.C voltage and current response in given R, L, C circuit.
2. Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L series circuit. Draw phasor diagram.
3. Use voltmeter, ammeter to determine active, reactive and apparent power consumed in given R-C series circuit. Draw phasor diagram.
4. Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumedin given R-L-C series circuit. Draw phasor diagram.
5. Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor.
. 6. Use voltmeter, ammeter, wattmeter to determine current, p.f. , active, reactive and apparent power in R-C parallel A.C. circuit.
7. Use voltmeter, ammeter, wattmeter, p.f meter to determine current, p.f., active, reactive and apparent power for given R-L-C parallel circuit with series connection of resistor and inductor in parallel with capacitor.
8. Use variable frequency supply create resonance in given parallel R-L-C circuit or by using variable inductor or capacitor.
9. Use voltmeter, ammeter, wattmeter, p.f meter to determine line and phase quantities of voltage and current for balanced three phase star and delta connected load and calculate active, reactive, and apparent power. Draw phasor diagram.
10. Use voltmeter, ammeter, wattmeter, p.f meter to determine line and phase quantities of voltage and current for unbalanced three phase star and delta connected load and calculate active, reactive, and apparent power. Draw phasor diagram.
11. Use voltmeter, ammeter to determine current through the given branch of a electric network by applying mesh analysis.

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Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-305
Course Title	Electrical and Electronic Measurements
Number of Credits	3 (L:3: T:0: P:0)

Course Objectives:

To Follow standard measurements and measuring instruments. To recognize the instruments for each measurement and their connections. Identify different types of electrical measuring instruments and their operation..

Course outcomes:

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Check the working of the electrical measuring instrument.
b) Use different types of measuring instruments for measuring voltage and current.
c) Use different types of measuring instruments for measuring electric power
d) Use different types of measuring instruments for measuring electric energy.
e) Use different types of electrical instruments for measuring various ranges of electrical parameters.

Unit – I Fundamentals of Measurements

Measurement: Significance, units, fundamental quantities and standards Classification of Instrument Systems:
Null and deflection type instruments Absolute and secondary instruments Analog and digital instruments Static and dynamic characteristics, types of errors Calibration: need and procedure Classification of measuring instruments: indicating, recording and integrating instruments. Essential requirements of an indicating instruments

Unit – II Measurement of voltage and current

DC Ammeter: Basic, Multi range, Universal shunt, DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity AC voltmeter: Rectifier type (half wave and full wave)CT and PT: construction, working and applications.
Clamp-on meter.

Unit– III Measurement of Electric Power

Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits Dynamometer type wattmeter: Construction and working Range: Multiplying factor and extension of range using CT and PT Errors and compensations. Active and reactive power measurement: One, two and three wattmeter method. Effect of Power factor on wattmeter reading in two wattmeter method. Maximum Demand indicator

Unit– IV Measurement of Electric Energy

Single and three phase electronic energy meter: Constructional features and working principle. Errors and their compensations. Calibration of single phase electronic energy meter using direct loading.

Unit– V Circuit Parameter Measurement, CRO and Other Meters

Measurement of resistance: Low resistance: Kelvin's double bridge, Medium Resistance: Voltmeter and ammeter method High resistance: Megger and Ohm meter: Series and shunt Measurement of inductance using Anderson bridge (no derivation and phasor diagram) Measurement of capacitance using Schering bridge (no derivation and phasor diagram) Single beam/single trace CRO, Digital storage Oscilloscope**:** Basic block diagram, working, Cathode ray tube, electrostatic deflection, vertical amplifier, time base generator, horizontal amplifier, measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications. Other meters: Earth tester, Digital Multimeter; L-C-R meter, Frequency meter (ferromagnetic and Weston type), Phase sequence indicator, power factor

meter (single phase and three phase dynamometer type), Synchro scope, Tri-vector meter Signal generator: need, working and basic block diagram. Function generator: need, working and basic block diagram, function of symmetry

Reference Books:

1. Theraja B. L., Theraja A. K., A Text Book of Electrical Technology Vol-I(Basic Electrical Engg.), S.Chand and Co. New Delhi, ISBN: 9788121924405
2. Mittle V. N., Basic Electrical Engineering, McGraw-Hill New Delhi, ISBN : 978-0-07-0088572-5,
3. Edward Hughes, Electrical Technology, Pearson Education, New Delhi, ISBN-13: 978- 0582405196
4. Rajput R.K., Electrical and Electronic Measurement and Instrumentation, S.Chand and Co. New Delhi, ISBN : 9789385676017
5. Sawhney A.K., Electrical and Electronics Measurements and Instrumentation., Dhanpai Rai and Sons,New Delhi, ISBN : 9780000279744
6. Suryanarayna N.V., Electrical Measurements and Measuring Instruments, S.Chand and Co. New Delhi , ISBN :8121920116

POLYTECHNIC ENGINEERING

Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-305
Course Title	Electrical and Electronic Measurements Lab
Number of Credits	1 (L:0; T:0; P:2)

List of practical to be performed:

1. Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale.
2. Identify the components of PMMC and MI instruments.
3. Troubleshoot PMMC and MI instruments.
4. Measure AC and DC quantities in a working circuit.
5. Extend range of ammeter and voltmeter by using (i) shunt and multiplier (ii) CT and PT.
6. Use Clamp-on meter for measurement of AC/DC current, AC/DC voltage.
7. Use electro-dynamic watt-meter for measurement of power in a single phase circuit
8. Troubleshoot electrodynamic watt-meter for measurement of power in a single phase circuit
9. Use single wattmeter for measurement of active and reactive power of three phase balanced load.
10. Use two watt-meters for measuring active power of three-phase balanced load.
11. Calibrate single phase electronic energy meter by direct loading
12. Use earth tester for measurement of earth resistance.
13. Use CRO for the Measurement of supply frequency in single-phase circuit.
14. Use Tri-vector meter for measuring kW, kVAr and kVA of a power line.

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Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination - AICTE Pattern

Undergraduate Diploma Courses in Engineering & Technology

Department of Electrical Engineering

Semester-III

Course Code	DEEA-306
Course Title	Summer Internship-1
Number of Credits	2 (L:0: T:0: P:0)

Course Outcomes:

The objective of undertaking industrial training is to provide work experience so that student's engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineering problem

Guidelines:

- The industrial training is also a kind of team activity. Here development and design work with a focus on learning application environment.
- The software analysis in industries should be 50% of the total work.
- Industrial training cater a system required in laboratory or real life.
- Student is expected to learn out specifications, methodology, resources required, critical issues involved in design and implementation of software.
- The student is expected to exert on testing of the proposed results as per the industry

THE END