PREFACE

The wave of liberalization and globalization has created an environment for free flow of information and technology through fast and efficient means the world over. This has lead to shrinking of world, bringing people from different cultures and environment together, giving rise to a global village. A shift has been taking place in India from closed economy to knowledge based and open economy. In order to cope-up with the challenges of handling new technologies, materials and methods, we have to develop human resources having appropriate knowledge, professional skills and attitude. Technical education system is one of the significant components for human resource development. **Polytechnics** play an important role in meeting the requirements of trained technical manpower for industries and field organizations. The initiatives being taken by the State Board of Technical Education, Tamilnadu to revise the curriculum of existing diploma programmes as per the needs of the industry are laudable.

In order to meet the requirements of future technical manpower, constant efforts have to be made to identify new employment opportunities, carryout activity analysis and design need based curricula of diploma programmes. This curriculum document has been designed by identifying job potential and competency profile of diploma holders leading to identification of curriculum areas for the course.

It is needless to emphasize that the real success of the diploma programme depends upon its effective implementation. This will require harnessing and effective utilization of resources. In addition to acquisition of appropriate physical resources, the availability of competent and qualified faculty is essential.

It is time for the managers of technical education system to reorganize the system to accept the challenges of both quantitative and qualitative expansion of technical education. The creation of EDUSAT facilities in the country must be exploited to its fullest extent to reap the benefits of interactive electronic media for teaching-learning process.

It is hoped that polytechnics will carry out job market research on a continuous basis to identify the new skill requirements and develop innovative methods of course offering and thereby infuse dynamism in the system.

Principal

Seshasayee Institute of Technology

ACKNOWLEDGEMENT

We gratefully acknowledge the assistance and guidance received from the following persons:

i) Commissioner Technical Education and Special Officer Curriculum Development centre, DOTE, Chennai for taking keen interest and support in the design of this curriculum.

ii) Programme Advisory Committee members :

Mr.S.DHARMASELVAN, Joint Director / MSME, Chennai

Dr.K.DHAYALINI, Professor and Head / EEE, K.Ramakrishnan College Of Engineering and Technology, Trichy

Mr.J.SENTHIL NATHAN, HOD/EEE, Government Polytechnic College, Trichy,

Mr.T.R.LAKSHMI NARASIMMAN, Head Business Development, Large Motors and Drives Applns, SIEMENS Ltd., Thane.

for their professional inputs and guidance in execution of the Curriculum and syllabus.

iii) Principal of this Institute for his Guidance and Academic freedom provided to the Department in design of this curriculum.

iv) All the faculty members from Department of Electrical and Electronics Engineering for their untiring assistance and support in curriculum design and documentation.

Coordinator

CONTENTS

1. Department Vision, Mission, PEO and PO

Vision

To meet the challenges of new technological advances and to provide update knowledge in the state of the art technology, re-orientation and up gradation of the curriculum to the level of industry relevant learning and training and thus to be a premier technical department that strives continuously for excellence in education

Mission

- To produce Electrical Engineers of high Caliber to serve the Society and Nation.
- To bridge the gap between industry and academic by framing curriculum and syllabus based on industrial needs
- To create and sustain environment of learning in which students acquire knowledge and learn to apply it professionally with due consideration of social and economical issues.
- To provide opportunity to enhance the creative talents of students and faculty members
- To inculcate moral and ethical values among the faculty and students

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Electrical and Electronics Engineering programme of Seshasayee Institute of Technology will prepare its diploma students

PEO1: To have fundamental and broad knowledge in Electrical and Electronics Engineering
PEO2: To apply creatively their understanding of engineering principles to the solution of problems arising in whatever career they choose
PEO3: To communicate their ideas and positions clearly and concisely
PEO4: To practice their Professions conforming to Ethical Values and Environmental friendly policies
PEO5: To work as a team in multi-cultural and multi-disciplinary Environments
PEO6: To adapt evolving Technologies, innovations and stay current with their Professions

PROGRAMME OUTCOMES (POs)

Students of Diploma in Electrical and Electronics Engineering course at our institute will be

PO1: Able to identify, analyze and provide solutions to problems in the field of Electrical and Electronic Engineering
PO2: Able to adopt energy conservation and renewable energy in order to promote eco-friendly electrical energy production
PO3: Able to communicate effectively in order to compete globally
PO4: Able to handle any situation with ethical and social responsibility
PO5: Able to work as an individual and as a team member in multi-cultural and multi-disciplinary Environments

PO6: Able to apply modern techniques and IT tools in Engineering

2. R E G U L A T I O N S

DIPLOMA COURSES IN ENGINEERING
(TERM PATTERN)
(Implemented from 2020- 2021)
F– SCHEME
(Common to all Programmes)

Description of the Course:

a. Full Time (3 years)

The Programme for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 terms* and the First Yearis common to all Engineering Branches.

b. Sandwich (3½ years)

The Course for the Sandwich Diploma in Paper Technology shall extend over a period of three and half academic years, consisting of 7 terms* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience. During 4th and/or during 7th term the students undergo industrial training for six months. Industrial training examination will be conducted after completion of every 6 months of industrial training.

** Each term will have 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses.*

Condition for Admission:

Condition for admission to the Diploma courses shall be required to have passed in The S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher SecondaryCourse in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board ofSecondary Education, Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & Should have studied the following courses.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
			Subjects Studied		
		Studied any three of the following subjects	Studied any three of the following subjects	Vocational subjects	
1.	All the Regular and Sandwich Diploma Courses	• Maths • Physics • Chemistry • Computer Science • Electronics • Information Technology • Biology • Informatics Practices • Bio Technology • Technical Vocational subject • Agriculture • Engineering Graphics • Business Studies • Entrepreneurship	• Maths • Physics • Chemistry • Computer Science • Electronics • Information Technology • Biology • Informatics Practices • Bio Technology • Technical Vocational subject • Agriculture • Engineering Graphics • Business Studies • Entrepreneurship	Related Vocational Subjects Theory& Practical	2 years course to be passed with appropriate Trade

- For the Diploma Programmes related with Engineering/Technology, the related / equivalent courses prescribed along with Practical's may also be taken for arriving the eligibility.
- Programmes will be allotted according to merit through counselling by the Principal as per communal reservation.
- Candidates who have studied Commerce Courses are not eligible for Engineering Diploma Programmes.

Age Limit:

No Age limit.

Medium of Instruction:

English

Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3/3 ½ academic years (Full Time/Sandwich), affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and 2/2 ½ years (Full Time/Sandwich), if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Programmes are given below:

Diploma Programmes	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Sandwich (Lateral Entry)	2½ Years	5½ Years

This will come into effect from F Scheme onwards i.e. from the academic year 2020-2021.

Programmes of Study and Curriculum outline

The Programmes of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical courses.

The curriculum outline is given in Annexure – I.

Examinations:

Autonomous Examinations in all Programmes of all the terms under the scheme of examinations will be conducted at the end of each term.

The internal assessment marks for all the courses will be awarded on the basis of continuous assessment earned during the term concerned. For each course, 25

marks are allotted for internal assessment. Autonomous Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

Continuous Internal Assessment:

A. For Theory Courses:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Course Attendance **5 Marks**

(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

80% - 83%	**1 Mark**
84% - 87%	**2 Marks**
88% - 91%	**3 Marks**
92% - 95%	**4 Marks**
96% - 100%	**5 Marks**

ii) Test # **10 Marks**

Two Tests each of 2 hours duration for a total of 50 marks are to be conducted. Average of these two test marks will be taken and the marks to be reduced to:

05 Marks

The Test – III is to be the Model Examination covering all the five units and the marks obtained will be reduced to:

05 Marks

Test	Units	When To Conduct	Marks	Duration
Test I	Unit – I & Half of Unit II	End of 6th week	50	2 Hrs
Test II	Remaining Half of Unit II & III	End of 12th week	50	2 Hrs
Test III	Model Examination: Covering all the 5 Units. (Autonomous Examinations-Question paper-pattern).	End of 16th week	100	3 Hrs

 # From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Cycle Test :(Test - I & Test- II) **:**

Part A Type questions (Any 4 out of 6 questions): 4 Questions × 2 mark 08 marks

Part B Type questions (Any 4 out of 6 questions): 4 Questions × 3 marks 12 marks

Part C Type questions (Either or): 3 Questions ×10 marks 30 marks

Total 50 marks

iii) Assignment **10 Marks**

a. **Written Assignment** **- 4 marks**
b. **Multiple Choice Questions** **- 3 marks**
c. **Seminar Presentation** **- 3 marks**

Total **- 10 Marks**

a. Written Assignment 4 Marks

For each course Two Assignments are to be given each for 10 marks and the average marks scored should be reduced for 4 marks.

b. Multiple Choice Questions 3 Marks

For each course one MCQ test are to be given for 30 marks and the marks scored should be reduced for 3 marks.

c. Seminar Presentation 3 Marks

The students have to select the topics either from their course or general courses which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the material for the given topic using the library hour and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all

theory courses and carries 3 marks for each theory course. The respective course faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (1 ½ marks for the material submitted in writing and 1 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 3 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one term after publication of Board Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

B. For Practical Subjects:

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:-

a)	**Attendance** (Award of marks same as theory subjects)	**: 5 Marks**
b)	**Procedure/ observation and tabulation/** Other Practical related Work	**: 10 Marks**
c)	**Record writing**	**: 10Marks**
	TOTAL	**: 25 Marks**

- All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks for each exercise as per the above allocation.

- At the end of the term, the average marks of all the exercises should be calculated for 20 marks (including Observation and Record writing) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject.

The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

Communication Skill Practical, Computer Application Practical and PhysicalEducation:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communication skill and ICT skill of students. As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

Project Work and Internship:

The students of all the Diploma Programme have to do a Project Work as part of the Curriculum and in partial fulfilment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. The Project work must be reviewed twice in the same term. The project work is approved during the V term by the properly constituted committee with guidelines.

a) Internal assessment mark for Project Work & Internship:

Project Review I	**…**	**10 marks**
Project Review II	**…**	**10 marks**
Attendance	**…**	**05 marks** (Award of marks same as theory subject pattern)
TOTAL	**…**	**25 MARKS**

Proper record should be maintained for the two Project Reviews and preserved for one term after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Board Examinations:

Demonstration/Presentation	**25 marks**
Report	**25 marks**
Viva Voce	**30 marks**
Internship Report	**20 marks**
TOTAL	**100* MARKS**

**Examination will be conducted for 100 marks and will be converted to 75 marks.*

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V term during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Boardexamination.

Scheme of Examinations:

The Scheme of examinations for courses is given in Curriculum outline

Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, TamilNadu and pass all the subjects prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a course if he/she secures not less than ***40% in theory subjects and 50%in practical subjects*** out of the total prescribed maximum marks including both the Internal Assessment and the Autonomous Examinations marks put together, course to thecondition that he/she secures at least a ***minimum of 40 marks out of 100 marks in the Autonomous Theory Examinations and a minimum of 50 marks out of 100 marks in the Autonomous Practical Examinations***.

Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in ***First Class with Superlative Distinction*** if he/she secures not less than 75% of the marks in all the courses and passes all the terms in the first appearance itself and passes all courses withinthe stipulated period of study 2 / 3 / 3½ years [Full time (lateral entry)/Full Time/Sandwich] without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in ***First Class with Distinction*** if he/she secures not less than 75% of the aggregate marks in all the terms put together and passes all the terms except the I and II term in the first appearance itself and passes all courses within the stipulated period of study 2 / 3 / 3½ years[Full time(lateral entry)/Full Time/Sandwich] without any break in study.

First Class:

A candidate will be declared to have passed in ***First Class*** if he/she secures not less than 60% of the aggregate marks in all the terms put together and passes allthe courses within the stipulated period of study 2 / 3 / 3½ years [Full time(lateral entry)/Full Time/Sandwich] without any break in study.

Second Class:

All other successful candidates will be declared to have passed in ***Second Class***. The above classifications are also applicable for the Sandwich students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in 2020 -2021).

Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

---*---

3. SALIENT FEATURES

Name of the Programme	:	Diploma Programme in Electrical and Electronics Engineering
Duration of the Programme	:	Three years (Six Semesters)
Entry Qualification	:	Matriculation or equivalent as prescribed by State Board of Technical Education,Tamilnadu
Intake	:	60
Pattern Of the Programme	:	Term (Semester) Pattern
Ratio Between Theory & Practical Classes	:	50 : 50 (Approximately)

4. EMPLOYMENT OPPORTUNITIES FOR DIPLOMA HOLDERS IN ELECTRICAL AND ELECTRONICS ENGINEERING

It is observed that employment in government/public sector undertakings are dwindling day by day. Keeping present scenario in view, following employment opportunities are visualized in different sectors of employment for diploma holders in electrical and electronics engineering.

4.1 Manufacturing Industry (Mechanical)

The Electrical diploma holder will be involved in following activities in mechanical manufacturing industry:

- Planning and execution for Electrical installation
- Distribution of Electrical Power
- Maintenance of Industrial Electrical System
- Repair and Maintenance of Electrical Machines and Equipment
- Repair and Maintenance of Electronic Control Circuitry
- Testing and Standardization for Quality Control
- Energy Conservation

4.2 Manufacturing Industry (Electrical and Electronics)

The Electrical diploma holder will be involved in following activities in Electrical and Electronics manufacturing industry:

- Assistance in Research and Development
- Assistance in Planning, Designing and Detailing
- Shop-floor Management including Quality Control
- Power Generation and Distribution
- Installation of Electrical Power Supply Systems
- Maintenance of Electrical and Electronic System(s)
- Repair and Maintenance of Electrical Machines/Equipment (including testing)
- Production
- Inventory Management
- Marketing and Sales

4.3 Government Departments such as Electricity Board, MES, PWD, Railways, Air bases, Airports, Defence, Thermal, Hydro and Nuclear Power Stations and other Boards and Corporations

The Electrical diploma holder will be involved in following type of activities in above mentioned Government Departments:

- Assistance in Planning and Design of Electrical generation, transmission, distribution and protection system including testing, quality control
- Estimating for electrical installation Construction, erection and commissioning of lines and Sub-stations

- Electrical Safety measures
- Operation and Maintenance of Lines and Sub-stations/underground cables
- Tariffs and Calculations of bills for consumption of electricity
- Inventory Management
- Repair and Maintenance of Electrical Machines/ Equipment
- Operation and maintenance of Thermal, Hydro and Nuclear Power Stations

4.4 Hospitals, Commercial Complexes, Service Sector Organizations like Hotels, Tourist-Resorts, high-rise buildings, Cinema/Theater Halls etc. Diploma holder in electrical engineering will be involved in following type of activities in above mentioned Service Sector Organizations:

- Layout of wiring circuit, planning and execution for Electrical Installation
- Standby or captive Power Generation and its Distribution
- Maintenance of Electrical and Electronic Equipment
- Preventive Maintenance of Communication System, Lifts, Air-Conditioning
- Plants and Water Supply System
- Inventory Management
- Estimation for electrical repair and maintenance work

4.5 Self Employment

Following type of self employment opportunities are available to the diploma holder in electrical engineering:

- Trading of Electrical Goods
- Establishing Repair and Maintenance Unit/ Centre
- Free Lancer for Repair and Maintenance of House-hold Electrical and Electronic Gadgets such as: Washing Machines, Geysers, Air Conditioners, Coolers and electrical installations etc.
- Electrical contractor
- Motor Winding Unit
- Auto-electrical Work
- Service sector

Can work as:

- Service and marketing engineer in the field of automation.
- Trainer of PLC & SCADA system.
- TSE (Technical Support Executive)

4.6 JOB PROFILE/ ACTIVITY PROFILE

(01) Reading and interpreting drawings related to electrical machines, equipment, wiring installations
(02) Selecting right kind and quality of materials
(03) Using measuring instruments, tools and testing devices for varied field applications
(04) Understanding of constructional details, principle of working, characteristics and application of electrical machines, equipment, appliances and instruments
(05) Understanding of salient features and working principles of generation, transmission, distribution, protection and utilization of electrical power in different sectors
(06) Understanding of practices involved in erection, testing/installation and commissioning of electrical machines, equipment, control panels and systems
(07) Troubleshooting of electrical machines, wiring installations, equipment and control systems
(08) Knowledge and awareness of: Power Tariff (Power Trade and Control), Indian Electricity rules, codes and Standards, Electrical Safety and Shock prevention Measures ,Labour Management,
(09) Understanding of safety practices such as earthing, fire and shock prevention measures adopted in industry and service sector
(10) Understanding the principles of basic and digital electronics, microprocessors and micro-controller based systems and their applications in electrical control circuits
(11) Uses Information Technology and computers for various applications in the field of electrical engineering
(12) Knowledge and awareness of upcoming technologies of their field like PLC,SCADA & DCS System
(13) Good knowledge of Electrical AutoCAD.
(14) Competencies in supervising shop floor/ work site operations
(15) Awareness about the environment, use of non-conventional energy sources, external financial and technical support system, and energy conservation techniques
(16) Knowledge of latest trends in the field of electronic controls, communication and instrumentation

5. COMPETENCY PROFILE OF DIPLOMA HOLDER IN ELECTRICAL AND ELECTRONICS ENGINEERING

Keeping in view the employment scenario and requirement of four domains of learning viz. Professional Development Domain, Continued Learning Domain, Human Relations Domain and Personal Development Domain, a diploma holder in Electrical and Electronics Engineering should have the:

1. Understanding of constructional details, principle of working, characteristics and application of electrical machines, equipment, appliances and instruments
2. Understanding of salient features and working principles of generation, transmission, distribution, protection and utilization of electrical power in different sectors
3. Ability to read and interpret drawings related to sub stations, electrical machines, equipment, wiring installations for light and power.
4. Competency in selection of right kind and quality of materials and preparation of estimates for installation of control panels used in industry.
5. Ability to prepare tender document as per given drawings.
6. Ability to use measuring instruments, tools and testing devices for varied field applications.
7. Competency in the design of control circuits for electrical machine control, control panels, wiring circuits etc.
8. Ability to draw Ladder diagram and write Program for Control of Machines using PLC.
9. Understanding of practices involved in erection, testing/installation and commissioning of electrical machines, equipment, control panels and systems.
10. Ability for fault diagnosis and repair of electrical machines, wiring installations, equipment and control systems.
11. Knowledge and awareness of:
    - Power Tariff (Power Trade and Control)
    - Indian Electricity rules, codes and Standards
    - Safety and Shock prevention Measures
    - Labour Management
    - Technical Report-writing Skills
    - Team Working, Interpersonal Relations and Human Values
    - Entrepreneurship Development (Self Employment)
    - Concern for wastage
12. Understanding of safety practices such as earthing, fire and shock prevention measures adopted in industry and service sector
13. Understanding the principles of basic and digital electronics, micro processors and micro- controller based systems and their applications in electrical control circuits.

14. Ability to use Information Technology and computers for various applications in the field of electrical engineering.
15. Knowledge of applied and engineering sciences for better comprehension of technologies used in electrical industry and service sector and to develop scientific temper, analytical skills and to facilitate continuing education.
16. Competencies in general, manual and machining skills for supervising shop floor/ work site operations
17. Proficiency in oral and written communication, technical report writing, managing relationship with juniors, pears and seniors for effective functioning in the world of work
18. Competency in solving simple problems related to various functional areas of electrical and electronics engineering may it be prototype development, diagnostic and fault finding or repair and maintenance of plant and equipment
19. Understanding of basic principles of managing men, material and equipment and techniques of achieving economy and quality
20. Awareness about the environment, use of non-conventional energy sources, external financial and technical support system, adopting energy conservation techniques
21. Knowledge of latest trends in the field of electronic controls, communication and instrumentation.

6. DERIVING CURRICULUM AREAS/SUBJECTS DERIVED FROM COMPETENCY PROFILE

Sl.No.	Competency Profile	Curriculum Areas
1.	Ability to read and interpret drawings related to sub stations, electrical machines, equipment, wiring installations for light and power,	✓ Basic Graphic and Drawing Skills ✓ Wiring circuits ✓ CAD drawing
2.	Ability to use measuring instruments, tools and testing devices for varied field applications	✓ Measurements and Instrumentation ✓ Electrical and Electronics Practicals
3.	Competency in the design of control circuits for electrical machine control, control panels, wiring circuits etc.	✓ Control and Maintenance of Electrical Machines ✓ Electrical Workshop Practice
4.	Understanding of constructional details, principle of working, characteristics and application of electrical machines, equipment, appliances and instruments	✓ Electrical Machines ✓ Utilization of Electrical Energy (Power System)
5.	Understanding of salient features and working principles of generation, transmission, distribution, protection and utilization of electrical power in different sectors	✓ Transmission and Distribution of ✓ Electrical Power ✓ Generation and Protection of ✓ Electrical Power
6.	Understanding of practices involved in erection/installation and commissioning of electrical machines, equipment, control panels and systems	✓ Erection Commissioning and operation of Electrical Machines and Installations
7.	Ability for fault diagnosis and repair of electrical machines, wiring installations, equipment and control systems	✓ Testing, repair and maintenance of Electrical Machines and Installations
8.	Competencies in general, manual and machining skills for supervising shop floor / work site operations Understanding of safety practices such as earthing, fire and shock prevention measures adopted in industry and service sector	✓ Electrical Workshop Practice

Sl.No.	Competency Profile	Curriculum Areas
9.	Competency in selection of right kind and quality of materials and preparation of estimates for installation of control panels used in industry	✓ Electrical Engineering Drawing ✓ Estimation and Costing
10.	Ability to prepare tender document as per given drawings	✓ Electrical Estimation and Costing
11.	Understanding the principles of basic and digital electronics, microprocessors and micro-controller based systems and their applications in electrical control circuits	✓ Digital Electronics ✓ Programmable Logic Controllers (PLCs) ✓ Microcontrollers
12.	Ability to use Information Technology and computers for various applications in the field of electrical engineering and Programming skill	✓ C++ Programming ✓ CAD & Simulation ✓ Computer Networks
13.	Knowledge of applied and engineering sciences for better comprehension of technologies used in electrical industry and service sector and to develop scientific temper, analytical skills and to facilitate continuing education	✓ Engineering Physics ✓ Engineering Chemistry ✓ Applied Mathematics ✓ Workshop Practice
14.	Proficiency in oral and written communication, technical report writing, managing relationship with juniors, pears and seniors for effective functioning in the world of work	✓ Communication Skills ✓ Project Work ✓ Exposure to World of Work ✓ Industrial Training
15	Competency in solving simple problems related to various functional areas of electrical engineering may it be prototype development, diagnostic and fault finding or repair and maintenance of plant and equipment	✓ Control and Maintenance of Electrical equipments ✓ Estimation and
.16	Awareness about the environment, use of non- conventional energy sources, external financial and technical support system, adopting energy conservation techniques	✓ Environmental Education ✓ Renewable (Non-Conventional) Sources of Energy

8. HORIZONTAL AND VERTICAL ORGANISATION OF THE COURSES

Sl.No.	Subject	Distribution of credits in various Terms					
		I	II	III	IV	V	VI
1.	Electrical Circuit Theory	-	-	5	-	-	-
2.	Electrical Machines-I	-	-	5	-	-	-
3.	Electronic Devices & Circuits	-	-	5	-	-	-
4.	Measurements & Instrumentation	-	-	4	-	-	-
5.	Electrical Circuits and Machines Lab	-	-	3	-	-	-
6.	Electronic Devices & Circuits Lab	-	-	2	-	-	-
7.	Electrical Workshop	-	-	2	-	-	-
8	Electrical Machines – II	-	-	-	5	-	-
9	Analog & Digital Electronics	-		-	5	-	-
10	Energy Conservation And Audit	-		-	5	-	-
11	E – Vehicle Technology & Policy	-		-	4	-	-
12	Electrical Machines and Instrumentation Lab	-		-	3	-	-
13	Analog & Digital Electronics Lab			-	2	-	-
14	CAD & Simulation Lab			-	2	-	-
15	Concurrent Career Development			-	5	-	-
16	Power System – I			-	-	5	
17.	Control & Maintenance of Electrical Machines	-	-	-	-	5	-
18	Elective – I Theory	-	-	-	-	4	-
19	Control & Maintenance of Electrical Machines Lab	-	-	-	-	3	-
20	Wiring, Estimation & Winding Lab	-	-	-	-	3	-
21	Elective – I Practical	-	-	-	-	2	-
22	Entrepreneurship and start up	-	-	-	-	3	-

23	Universal Human values	-	-	-	-	5	-
24	Power System - II	-	-	-	-	-	5
25	Power Electronics	-	-	-	-	-	5
26	Elective – II Theory	-	-	-	-	-	5
27	Power Electronics Lab	-	-	-	-	-	3
28	Elective –II Practical	-	-	-	-	-	2
29	Project work & Internship	-	-	-	-	-	3
	Total			26	31	30	23
Total Credits = First year 60 credits + programme 110 credits = 170 credits							

EQUIVALENT PAPERS

OF

E SCHEME COURSES

TO

F SCHEME COURSES

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

EQUIVALENT PAPERS

OF E SCHEME COURSES TO F SCHEME COURSES

III TERM

E-SCHEME		F-SCHEME	
Course Code	**Course Title**	**Course Code**	**Course Title**
2E3201	Electrical Circuit Theory	2F3201	Electrical Circuit Theory
2E3202	Electrical Machines – I	2F3202	Electrical Machines – I
2E3203	Electronic Devices & Circuits	2F3203	Electronic Devices & Circuits
2E3401	C++ Programming	---	No Equivalent Paper
2E3204	Electrical Machines-I Lab	2F3205	Electrical Circuits and Machines Lab
2E3205	Electronic Devices & Circuits Lab	2F3206	Electronic Devices & Circuits Lab
2E3402	C++ Programming Lab	---	No Equivalent Paper

IV TERM

E-SCHEME		F-SCHEME	
Course Code	**Course Title**	**Course Code**	**Course Title**
2E4301	Electrical Machines – II	2F4301	Electrical Machines – II
2E4302	Analog & Digital Electronics	2F4302	Analog & Digital Electronics
2E4206	Measurements & Instrumentation	2F3204	Measurements & Instrumentation (III Term)
2E4303	Electrical Machines-II Lab	2F4304	Electrical Machines and Instrumentation Lab
2E4304	Analog & Digital Electronics Lab	2F4305	Analog & Digital Electronics Lab
2F4207	Electrical Workshop	2F3207	Electrical Workshop (III Term)
2E4207	Life &Employability skill Practical	---	No Equivalent Paper

V TERM

E-SCHEME		F-SCHEME	
Course Code	**Course Title**	**Course Code**	**Course Title**
2E5306	Power System – I	2F5307	Power System – I
2E5307	Control & Maintenance of Electrical Machines	2F5308	Control & Maintenance of Electrical Machines
2E5403.1	Microcontroller	2F5402.1	Micro Controller
2E5403.2	VLSI Design	2F5402.2	VLSI Design
2E5403.3	Electrical Machine Design	---	No Equivalent Paper
2E5308	Control & Maintenance of Electrical Machines Lab	2F5310	Control & Maintenance of Electrical Machines Lab
2E5309	Wiring, Winding & Estimation Lab	2F5309	Wiring, Estimation &Winding Lab
2E5404.1	Microcontroller Lab	2F5403.1	Micro Controller Lab
2E5404.2	VLSI Design Lab	2F5403.2	VLSI Design Lab
2E5404.3	Electrical Machine Design Lab	---	No Equivalent Paper
2E5405	CAD & Simulation Lab	2F4306	CAD & Simulation Lab (IV Term)

VI TERM

E-SCHEME		F-SCHEME	
Course Code	**Course Title**	**Course Code**	**Course Title**
2E6310	Power System - II	2F6311	Power System - II
2E6311	Power Electronics	2F6312	Power Electronics
2E6312	Renewable Energy Sources & Energy Auditing	2F5402.3	Renewable Energy Sources & Energy Auditing (V Term)
2E6406.1	Programmable Logic Controller	2F6405.1	Programmable Logic Controller
2E6406.2	Bio-Medical Instrumentation	2F6405.2	Bio-Medical Instrumentation
2E6406.3	Computer Hardware & Networking	2F6405.3	Computer Hardware & Networking
2E6313	Power Electronics Lab	2F6313	Power Electronics Lab
2E6407.1	Programmable Logic Controller Lab	2F6406.1	Programmable Logic Controller Lab
2E6407.2	Bio-Medical Instrumentation Lab	2F6406.2	Bio-Medical Instrumentation Lab
2E6407.3	Computer Hardware & Networking Lab	2F6406.3	Computer Hardware & Networking Lab
2E6408	Project Work	2F6407	Project Work & Internship

Detailed Content of Various Courses

TERM - III