



ESTD : 2007

# Sri Indu Institute of Engineering and Technology (Autonomous)

(Formerly RVR Institute of Engineering & Technology )

**An Autonomous Institution Under UGC**

NAAC Accredited. Recognized Under 2(f) of UGC Act 1956

EAMCET CODE: INDI

Approved by AICTE, New Delhi, & Affiliated to JNTUH, Hyderabad.

JNTUH CODE: X3



## COURSE FILE

ON

## BASIC ELECTRICAL ENGINEERING LAB

**Course Code – EE202ES**

**I B. Tech Semester-II  
A.Y. 2022-2023**

**Prepared by  
G.BHARGAVI  
Asst. Professor**

Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda(VIII) Ibrahimpatnam (M) R.R. Dist-501 510

PRINCIPAL  
Sri Indu Institute of Engineering & Tech.  
Sheriguda(VIII), Ibrahimpatnam  
R.R. Dist. Telangana-501 510.



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JNTUH CODE: X3

<b>Academic Year</b>	2022-2023
<b>Course Title</b>	Basic Electrical Engineering Lab
<b>Course Code</b>	EE202ES
<b>Programme</b>	B.Tech
<b>Year &amp; Semester</b>	I & II
<b>Branch &amp; Section</b>	AI&DS
<b>Regulation</b>	BR22
<b>Room No</b>	D204 & A005
<b>Name of the Lab Incharge</b>	S.NISCHALA
<b>Name of the Faculty Incharge</b>	G.BHARGAVI

## Index of Lab File

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1	Institute vision and mission
2	Programme outcomes
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## INSTITUTE VISION & MISSION

### Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

### Mission:

- **IM1:** To offer outcome-based education and enhancement of technical and practical skills.
- **IM2:** To Continuous assess of teaching-learning process through institute-industry collaboration.
- **IM3:** To be a centre of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.
- **IM4:** To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

  
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Department of H&S  
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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

## PROGRAMME OUTCOMES

**PO1: Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2: Problem Analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3: Design / Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4: Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**PO6: The Engineer & Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment & Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual & Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.

**PO11: Project Management & Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Website: <https://siiet.ac.in/>

## B.Tech. in ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

### COURSE STRUCTURE, I YEAR SYLLABUS (BR22 Regulations)

Applicable from Academic Year: 2022-23 Batch

#### I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA101BS	Matrices and Calculus	3	1	0	4
2.	AP102BS	Applied Physics	3	1	0	4
3.	CS103ES	Programming for Problem Solving	3	0	0	3
4.	ME102ES	Engineering Workshop	0	1	3	2.5
5.	EN104HS	English for Skill Enhancement	2	0	0	2
6.	CS106ES	Elements of Computer Science & Engineering	0	0	2	1
7.	AP105BS	Applied Physics Laboratory	0	0	3	1.5
8.	CS107ES	Programming for Problem Solving Laboratory	0	0	2	1
9.	EN107HS	English Language and Communication Skills Laboratory	0	0	2	1
10.	*MC101ES	Environmental Science	3	0	0	0
11.		Induction Programme				
<b>Total</b>			<b>14</b>	<b>3</b>	<b>12</b>	<b>20</b>

#### I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2.	CH203BS	Engineering Chemistry	3	1	0	4
3.	ME201ES	Computer Aided Engineering Graphics	1	0	4	3
4.	EE201ES	Basic Electrical Engineering	2	0	0	2
5.	EC201ES	Electronic Devices and Circuits	2	0	0	2
6.	CH206BS	Engineering Chemistry Laboratory	0	0	2	1
7.	EE202ES	Basic Electrical Engineering Laboratory	0	0	2	1
8.	CS201ES	Python Programming Laboratory	0	1	2	2
9.	CS203ES	IT Workshop	0	0	2	1
<b>Total</b>			<b>11</b>	<b>3</b>	<b>12</b>	<b>20</b>



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Website: <https://siiet.ac.in/>

## BASIC ELECTRICAL ENGINEERING LABORATORY (Course Code: EE202ES)

**B.Tech. I Year II Sem.**

**L T P C**  
**0 0 2 1**

**Prerequisites:** Basic Electrical Engineering

### Course Objectives:

- To measure the electrical parameters for different types of DC and AC circuits using conventional and theorems approach.
- To study the transient response of various R, L and C circuits using different excitations.
- To determine the performance of different types of DC, AC machines and Transformers.

**Course Outcomes:** After learning the contents of this paper the student must be able to

- Verify the basic Electrical circuits through different experiments.
- Evaluate the performance calculations of Electrical Machines and Transformers through various testing methods.
- Analyze the transient responses of R, L and C circuits for different input conditions.

### List of experiments/demonstrations:

#### PART- A (compulsory)

1. Verification of KVL and KCL
2. Verification of Thevenin's and Norton's theorem
3. Transient Response of Series RL and RC circuits for DC excitation
4. Resonance in series RLC circuit
5. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits
6. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single-Phase Transformer
7. Performance Characteristics of a DC Shunt Motor
8. Torque-Speed Characteristics of a Three-phase Induction Motor.

#### PART-B (any two experiments from the given list)

1. Verification of Superposition theorem.
2. Three Phase Transformer: Verification of Relationship between Voltages and Currents(Star-Delta, Delta-Delta, Delta-star, Star-Star)
3. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)
4. Measurement of Active and Reactive Power in a balanced Three-phase circuit
5. No-Load Characteristics of a Three-phase Alternator

### TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4<sup>th</sup> Edition, 2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2<sup>nd</sup> Edition, 2008.



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## COURSE OUTCOMES

**Course Name: Basic Electrical Engineering Lab (C127)**

At the End of the course, student will be able to

CO No	DESCRIPTION
C127.1	Apply basic circuit laws and simplify the network using reduction techniques. (Application)
C127.2	Understand time domain analysis, resonance in RLC parameters and evaluate impedance in RLC circuit (Knowledge)
C127.3	Understand the working concept , Select range of apparatus based on the ratings of different machines like transformers and motors (Knowledge)
C127.4	Determine efficiency and regulation of transformers by various test (Evaluation)
C127.5	Determine the performance characteristics of dc shunt motor. (Evaluation)
C127.6	Determine 3 phase power, torque speed characteristics of 3 phase induction motor. (Evaluation)

### COs and POs & PSOs Mapping

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
C127.1	3	3	2	1	-	-	-	-	2	1	-	2	-	-
C127.2	3	3	1	2	1	-	-	-	2	1	-	2	-	-
C127.3	3	-	-	-	1	-	-	-	2	-	-	3	-	-
C127.4	2	3	1	-	1	1	-	-	3	-	-	2	-	-
C127.5	2	3	1	-	1	1	-	-	3	-	-	2	-	-
C127.6	2	3	1	-	1	1	-	-	3	-	-	2	-	-
<b>PO Avg</b>	<b>2.5</b>	<b>3</b>	<b>1.2</b>	<b>1.5</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>2.5</b>	<b>1</b>	<b>-</b>	<b>2.17</b>	<b>-</b>	<b>-</b>

3-High

2-Medium

1-Low



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## LIST OF EXPERIMENTS AND THEIR CO, PO MAPPING

S.No	Name of The Experiment	CO	PO
1	Verification of KVL and KCL	1	1,2,3,4,9,10,12
2	Verification of Thevenin's and Norton's theorem	1	1,2,3,4,9,10,12
3	Transient Response of Series RL and RC circuits for DC excitation	2	1,2,3,4,5,9,10,12
4	Resonance in series RLC circuit	2	1,2,3,4,5,9,10,12
5	Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits	2	1,2,3,4,5,9,10,12
6	Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single-Phase Transformer	3	1,5,9,12
7	Performance Characteristics of a DC Shunt Motor	5	1,2,3,5,6,9,12
8	Torque-Speed Characteristics of a Three-phase Induction Motor.	6	1,2,3,5,6,9,12
9	Verification of Superposition theorem	1	1,2,3,4,9,10,12
10	Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)	4	1,2,3,5,6,9,12





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<https://siiet.ac.in/>

**Class:** AI &DS

**Semester:** II **W.E.F**-03-04-2023

**LH:-D-210**

	I 9:40- 10:30	II 10:30 - 11:20	III 11:20- 12:10	12:10- 12.45	IV 12.45- 1.35	V 1.35- 2.25	VI 2.25- 3.15	VII 3.15-4.00
<b>MON</b>	CAEG PRACTICE			<b>L U N C H</b>	EC	BEE	EDC	LIBRARY
<b>TUE</b>	EC/BEE LAB				ODE	EC	BEE	BEE(T)/EDC(T)
<b>WED</b>	ITWS LAB				ODE	EDC	BEE	PYTHON(T)
<b>THU</b>	ODE	EC	EDC		EC/BEE LAB			ODE(T)/EC(T)
<b>FRI</b>	BEE	ODE	ODE		CAEG PRACTICE			EDC(T)/ BEE(T)
<b>SAT</b>	EDC	EC	BEE		PYTHON LAB			EC(T)/ODE(T)

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
MA201BS	ODE-Ordinary Differential Equations & Vector Calculus	V.SUJATHA	CH206BS	EC LAB-Engineering Chemistry Laboratory	K.MOUNIKA/V.MOUNIKA
CH203BS	EC-Engineering Chemistry	K.MOUNIKA	EE202ES	BEE LAB-Basic Electrical Engineering Laboratory	G.BHARGAVI/K.RAJASHEKAR
ME201ES	CAEG-Computer Aided Engineering Graphics	A.MALLESH	CS201ES	PYTHON Programming Laboratory	M.TEJASWI/ P.BALU
EE201ES	BEE-Basic Electrical Engineering	G.BHARGAVI	CS203ES	ITWS-IT Workshop	N.KEERTHI CHANDANA/B.SWATHI
EC201ES	EDC-Electronic Devices & Circuits	P.SRILATHA			

*G. Srinivas*  
Class In-Charge

*Ch. Saijith*  
Time Table Coordinator



*[Signature]*  
Head of The Department  
Sri Indu Institute of Engg. & Tech  
Main Road, Sheriguda(V),  
Ibrahimpattam(M), R.R. Dist.  
Telangana 501 510

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**X3**

**BR22**

## **Lab External Question paper**

Year & Semester: I-II

Branch: AI&DS

Subject Name: Basic Electrical Engineering Lab

Faculty Name: G.BHARGAVI

### **S. No.                      QUESTIONS**

1. Verification of KVL.
2. Verification of KCL.
3. Verification of Thevenins theorem.
4. Verification of Nortons theorem.
5. Transient Response of Series RL circuit using DC excitation.
6. Transient Response of Series RC circuit using DC excitation.
7. Resonance in series RLC circuit.
8. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits.
9. Verification of Superposition theorem.
10. Torque-Speed Characteristics of a Three-phase Induction Motor.
11. Performance Characteristics of a DC Shunt Motor.
12. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)



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## BEE Lab External Time Table Examination Branch

A.Y. : 2022-23

SEM-II

DATE	Day	Branch	Session	H T. No	Total No of Students
21-8-2023	MONDAY	AIML-B	FN	22X31A6651 TO 22X31A6697	47
22-8-2023	TUESDAY	AIML-A	FN	22X31A6601 TO 22X31A6650	50
23-8-2023	WEDNESDAY	IOT	FN	22X31A6901 TO 22X31A6963	63
24-8-2023	THURSDAY	AI&DS	FN	22X31A7201 TO 22X31A7264	64
25-8-2023	FRIDAY	ECE	FN	22X31A0401 TO 22X31A0464	64

  
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Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda(V) Ibrahimpatnam (M) R.R. Dist-501 510

  
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<https://siiet.ac.in/>

## BEE Lab External Time Table with examiners

A.Y. : 2022-23

SEM-II

DATE	Day	Branch	Session	HT.No	Total No of Students	Internal Examiner	External Examiner
21-8-2023	MONDAY	AIML-B	FN	22X31A6651 TO 22X31A6697	47	K.RAJASHEKAR	RAJESH BABU
22-8-2023	TUESDAY	AIML-A	FN	22X31A6601 TO 22X31A6650	50	K.RAJASHEKAR	BALU NAIK
23-8-2023	WEDNESDAY	IOT	FN	22X31A6901 TO 22X31A6963	63	S.NISCHALA	RATNA KISHORI
24-8-2023	THURSDAY	AI&DS	FN	22X31A7201 TO 22X31A7264	64	G.BHARGAVI	G.GANESH WAR
25-3-2023	FRIDAY	ECE	FN	22X31A0401 TO 22X31A0464	64	M.P.REENA	LAXMI



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## LAB OCCUPANCY CHART

### BASIC ELECTRICAL ENGINEERING LAB

	<b>I</b> 9:40-10:30	<b>II</b> 10:30 -11:20	<b>III</b> 11:20-12:10		<b>IV</b> 12.45-1.35	<b>V</b> 1.35-2.25	<b>VI</b> 2.25-3.15	<b>VII</b> 3.15-4.00
<b>MON</b>	I BTECH II SEM AI&ML-A			<b>L U N C H</b>				
<b>TUE</b>	I BTECH II SEM AI&DS				I BTECH II SEM AI&ML-B			
<b>WED</b>	I BTECH II SEM ECE				I BTECH II SEM IOT			
<b>THU</b>					I BTECH II SEM AI&DS			
<b>FRI</b>	I BTECH II SEM AI&ML-A				I BTECH II SEM ECE			
<b>SAT</b>	I BTECH II SEM IOT				I BTECH II SEM AI&ML-B			

Head of the Department  
 Department of H&S  
 SRI INDU INSTITUTE OF ENGG & TECH  
 Sheriguda(V) Ibrahimpatnam (M) R.R. Dist-501 510

**PRINCIPAL**  
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## BASIC ELECTRICAL ENGINEERING LAB

### Do's

1. Pull the plug itself, not the cord attached to it
2. Disconnect any appliances that spark and have it repaired immediately
3. Always disconnect appliances before cleaning them
4. Turn of appliance when you leave home
5. Clean appliance and free of dust, lint grease,
6. Use moisture resistant cards when outside.
7. Wear rubber solid shoes when operating power tools
8. Follow manufacturer's instructions when operating electrical devices. All electrical devices should carry an underwriter's laboratory approval tag
9. Make sure outdoor electrical out lets are covered with weather proof covers
10. Use extension cards only for temporary applications
11. Use heavy duty cards when using power tools
12. Keep work areas clean and dry. Sparks can ignite wood scraps, saw dust and solvents
13. Make sure your power tools are grounded or certified double insulated.
14. When utilizing adapters, make sure to screw in the wire for grounding.

### Don'ts

1. Never turn on an appliance when standing or sitting in water. Shocks can be fatal.
2. Never overload a circuit by plugging into many appliances
3. Plug three way grounded plugs into appropriate outlets. Never tamper with the third prong
4. Never install cords under rugs where they will become warn by foot traffic



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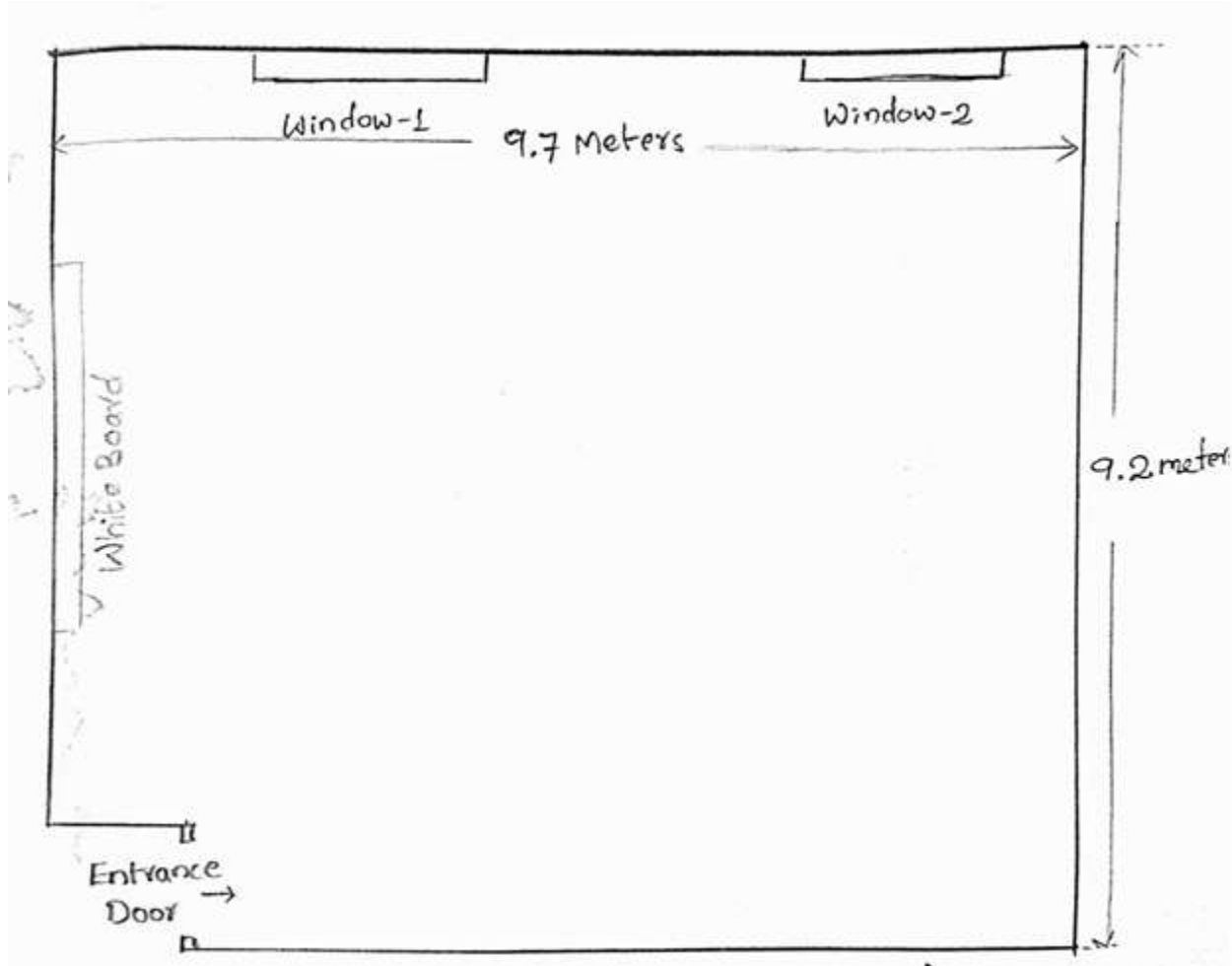
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Website: <https://siiet.ac.in/>

## BASIC ELECTRICAL ENGINEERING LAB

### PHYSICAL LAB-1 FLOOR PLAN

ROOM NO: D-204



Lab Area (in sq.m) = 89.24

*[Signature]*  
Lab In-Charge

*[Signature]*  
Head of the Department  
Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda (V) Ibrahimpatnam (M) R.R. Dist-501 510



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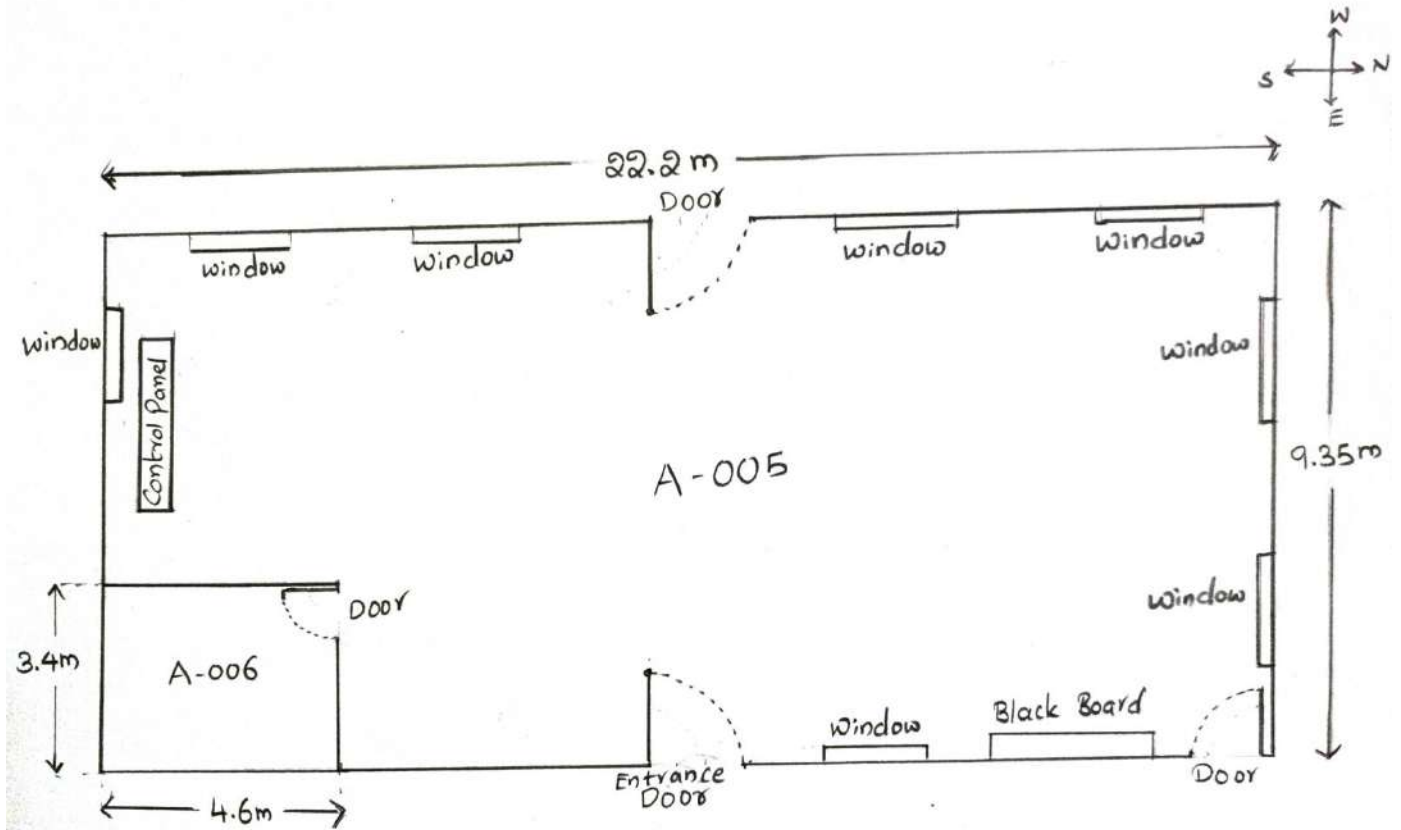
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Website: <https://siiet.ac.in/>

## BASIC ELECTRICAL ENGINEERING LAB

### PHYSICAL LAB-2 FLOOR PLAN

ROOM NO: A-005



Lab Area (in sq.m) = 191.93

*[Signature]*  
Lab In-Charge

*[Signature]*  
Head of the Department  
Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda (V) Ibrahimpatnam (M) R.R. Dist-501 510





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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

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## Lab manual link

<https://drive.google.com/file/d/1CezhXs40s30tKHGvSy8DOi0bg0xJMB-Z/view>



40	22X31A7240	8	6	4
41	22X31A7241	10	8	7
42	22X31A7242	10	9	9
43	22X31A7243	10	9	7
44	22X31A7244	10	8	8
45	22X31A7245	9	8	8
46	22X31A7246	9	6	5
47	22X31A7247	5	7	6
48	22X31A7248	10	10	8
49	22X31A7249	10	9	10
50	22X31A7250	9	8	7
51	22X31A7251	9	8	6
52	22X31A7252	9	8	8
53	22X31A7253	10	8	7
54	22X31A7254	10	9	8
55	22X31A7255	9	8	8
56	22X31A7256	9	9	6
57	22X31A7257	10	9	10
58	22X31A7258	7	8	5
59	22X31A7259	10	9	9
60	22X31A7260	10	9	8
61	22X31A7261	10	8	8
62	22X31A7262	10	8	8
63	22X31A7263	7	6	7
64	22X31A7264	7	6	7
65				
Target set by the faculty / HoD		6.00	6.00	6.00
Number of students performed above the target		63	62	58
Number of students attempted		64	64	64
Percentage of students scored more than target		98%	97%	91%

**CO Mapping with Exam Questions:**

CO - 1	y	y	Y
CO - 2	y	y	Y
CO - 3	y	y	Y
CO - 4			
CO - 5			
CO - 6			

% Students Scored	98%	97%	91%
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**CO Attainment based on Exam Questions:**

CO - 1	98%	97%	91%
CO - 2	98%	97%	91%
CO - 3	98%	97%	91%
CO - 4			
CO - 5			
CO - 6			

CO	Intrnal practical	E+E+R	Overall	Level
CO-1	98%	91%	94%	3
CO-2	98%	91%	94%	3
CO-3	98%	91%	94%	3
CO-4				
CO-5				
CO-6				

Attainment Lev	
1	40%
2	50%
3	60%

Attainment (Internal 1 Examination) =

**3**

R+O+A : RECORD+OBSERVATION+ATTANDANCE

V+V: VIVA VOICE

E+E+R:EXPERIMENT WRITE UP+EXECUTION+RESULT



46	22X31A7246	7	8	7	10
47	22X31A7247	7	0	5	10
48	22X31A7248	8	8	10	10
49	22X31A7249	10	10	10	10
50	22X31A7250	10	5	9	10
51	22X31A7251	10	7	9	10
52	22X31A7252	10	7	9	10
53	22X31A7253	10	8	9	10
54	22X31A7254	10	6	9	10
55	22X31A7255	10	9	9	10
56	22X31A7256	10	6	7	10
57	22X31A7257	10	9	10	10
58	22X31A7258	7	8	5	10
59	22X31A7259	10	8	10	10
60	22X31A7260	10	9	10	10
61	22X31A7261	10	8	9	10
62	22X31A7262	10	7	9	10
63	22X31A7263	9	8	5	10
64	22X31A7264	7	0	5	10
65					
Target set by the faculty / HoD		6.00	6.00	6.00	6.00
Number of students performed above the target		64	48	46	64
Number of students attempted		64	64	64	64
Percentage of students scored more than target		100%	75%	72%	100%

**CO Mapping with Exam Questions:**

CO - 1				
CO - 2				
CO - 3				
CO - 4	v	v	Y	v
CO - 5	v	v	Y	v
CO - 6	v	v	Y	v

% Students Scored	100%	75%	72%	100%
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**CO Attainment based on Exam Questions:**

CO - 1				
CO - 2				
CO - 3				
CO - 4	100%	75%	72%	100%
CO - 5	100%	75%	72%	100%
CO - 6	100%	75%	72%	100%

CO	Intrnal practical	E+E+R	ppt	Overall	Level
CO-1					
CO-2					
CO-3					
CO-4	88%	72%	100%	86%	3
CO-5	88%	72%	100%	86%	3
CO-6	88%	72%	100%	86%	3

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal 2 Examination) =

**3**

R+O+A : RECORD+OBSERVATION+ATTANDANCE

V+V: VIVA VOICE

E+E+R:EXPERIMENT WRITE UP+EXECUTION+RESULT





# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

## Course Outcome Attainment

Name of the faculty : G.BHARGAVI

Academic Year: 2022-2023

Branch & Section: AI&DS

Year / Semester: I/II

Lab Course Name: Basic Electrical Engineering Lab

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	3.00	3.00
CO2	3.00		3.00	3.00	3.00
CO3	3.00		3.00	3.00	3.00
CO4		3.00	3.00	3.00	3.00
CO5		3.00	3.00	3.00	3.00
CO6		3.00	3.00	3.00	3.00
<b>Internal &amp; University Attainment:</b>			3.00	3.00	
<b>Weightage</b>			40%	60%	
<b>CO Attainment for the course (Internal, University)</b>			1.20	1.80	
<b>CO Attainment for the course (Direct Method)</b>			3.00		

Overall course attainment level

**3.00**

