



THIRD-YEAR DIPLOMA ELECTRICAL ENGINEERING SYLLABUS

Semester: 5th

Course Code (Lab): 002203504

Type of Course: PCC-LC-14

Course Name: FUNDAMENTALS OF POWER ELECTRONICS-LAB

Course Prerequisites: Fundamentals of Electronics

COURSE OBJECTIVE(S):

Electrical engineer must have knowledge about electronics devices because now a days in industry many electronics components are used, So to meet industrial demands this course discuss about fundamental concepts and principles of basic electronics and aims at providing construction, working and applications of various types of semiconductor devices.

TEACHING & EXAMINATION SCHEME:

Teaching Scheme (Hrs/Week)				Examination Scheme				
Theory	Tutorial	Practical	Credit	SEE		CA		
				Th	Pr	MSE	PLE	LA
0	0	2	1	00	25	00	00	25
				Total				
				50				

SEE: Semester End Examination; CA: Continuous Assessment; Th: Theory; Pr: Practical; MSE: Mid Semester Examination; PLE: Participatory Learning Experience; LA: Laboratory Assessment

TOTAL Practical Hours: No. of Pr. and Prt. Hrs/Week*15 = 30

LIST OF PRACTICALS: (sample for 2 hrs/week)*15 weeks

Sr. No.	Content	Unit No.	Time Duration
1	Test the proper functioning of power transistor.	1	2
2	Test the proper functioning of IGBT.	2	2
3	Test the proper functioning of DIAC to determine the break over voltage.	2	2
4	Determine the latching current and holding current using V-I characteristics of SCR.	2	2
5	Test the variation of R, C in R and RC triggering circuits on firing angle of SCR.	2	2
6	Test the effect of variation of R, C in UJT triggering technique.	3	2
7	Use CRO to observe the output waveform of half wave controlled rectifier with resistive load and determine the load voltage.	1	4
8	Draw the output waveform of Full wave controlled rectifier with R load, RL load, free wheeling diode and determine the load voltage.	2	4
9	Test the performance of given SMPS, UPS.	4	2
10	Simulate above firing angle control on SCILAB software	3	2
11	Troubleshoot the Burglar's alarm, Emergency light system, Speed control system, Temperature control system.	5	4
12	Perform the operation of Class - A, B, C, turn off circuits.	3	2



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		Total	30
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Text Book(s):

Title of the Book	Author(s)	Publication
Fundamentals Of Electronics	R.P Ajwalia	Mehta Prakashan

Reference Book(s):

Title of the Book	Author(s)	Publication
Principles of Electronics	V.K. Mehta	S.Chand, New Delhi-2012
Electronic device and circuit	J.B. Gupta	S.K. kataria& sons-2013
Electronics Principles	S.K Sahdev	Dhanpatrai-New Delhi- 2022

Web Material Link(s):

- a) <https://circuitmaker.com/>
- b) <https://www.pspice.com/>
- c) <https://www.electronics-tutorials.ws/>

Equivalent/Corresponding Course on NPTEL (SWAYAM):

PRACTICAL EVALUATION:

Sr. No.	Activity	Marks	Weightage
1	Semester End Examination (External Practical)	25	60%
2	Continuous Assessment Practical (CAP)	25	40%
	Semester End Examination (External Practical)		
1(a)	Lab Experiment/Exercise		30%
1(b)	Viva-voce		20%
1(c)	Certified Record		10%
	Continuous Assessment Practical (CAP)		
2(a)	Day to day Laboratory Work & Attendance		15%
2(b)	Submission of Laboratory Work/Journal		10%
2(c)	Exam		15%

* For 4 Credit Subjects

1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practicals: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)



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Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:

Level	Remember	Understand	Apply	Analyze	Evaluate	Create
% Weightage	20%	20%	15%	15%	15%	15%

COURSE OUTCOMES:

CO1	Select power electronic devices for specific applications.
CO2	Maintain the performance of Thyristors.
CO3	Troubleshoot turn-on and turn-off circuits of Thyristors.
CO4	Maintain phase controlled rectifiers
CO5	Maintain industrial control circuits.