



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	1 st Year M. Tech, Power Systems		
Course Title	POWER CONVERSION LABORATORY		
Course Code	EE607	No. of Credits	02
Course Code of Pre-requisite subject(s)			
Session	July 2023	Section (if, applicable)	
Name of Faculty	Dr. P Srinivasa Rao Nayak	Department	EEE
Email	psnayak@nitt.edu	Telephone No.	7708243070
Name of Course Coordinator(s) (if, applicable)	Dr. Karthik Thirumala		
Course Type (please tick appropriately)	<input type="checkbox"/> Elective <input checked="" type="checkbox"/> Core Course		
Syllabus (approved in BoS)			
To simulate, test and analyse the following Power Electronic Circuits: 1) Single- Phase and Three- Phase Controlled Rectifier 2) Single- Phase Inverter 3) Three- Phase Inverter (120° and 180° modes of operation) 4) DC – DC Converters 5) Phase Controlled Circuits 6) DC and AC Circuit Breakers 7) Mini Project			
COURSE OBJECTIVES			
To enable the Power System students to get an insight into the basic Power Electronic Circuits.			



MAPPING OF COs with PO's

Course Outcomes	Programme Outcomes (PO)		
	(Enter Numbers only)		
Upon completion of the course, the student will be able to	PO1	PO2	PO3
1. Test and analyses the basic rectifier and inverter circuits.	2	1	1
2. Test and analyses the controlled circuits and circuit breakers	2	1	2
3. Design basic Power Electronic Control Circuits for Power System Applications	3	2	3

COURSE PLAN – PART II			
COURSE TEACHING AND LEARNING ACTIVITIES			
S. No.	Week/Contact Hours	Topic	Mode of Delivery
1	Academic Calendar Week 5 Aug 28th – Sep 1st	Introduction to course and MATLAB basics	Online tools related software and corresponding videos
2	Week 6 Sep 4th – 8th	MATLAB basics Demonstration	Online tools related software and corresponding videos
3	Week 7 Sep 11th-15th	Design and analysis of 1ph controlled and uncontrolled rectifiers for electrical heaters	Online tools related software and corresponding videos
4	Week 8 Sep 18th-22th	Design and analyze a three-phase fully controlled rectifier circuit for feeding separately excited DC motor.	Online tools related software and corresponding videos



5	Week 10 Oct 2nd - 6th	Design and analysis of buck converter to feeding DC motor.	Online tools related software and corresponding videos
6	Week 11 Oct 9th - 13th	Design and analysis of boost converter for battery charging.	Online tools related software and corresponding videos
-	Week 12 Oct 16th- 20th	To design a dc-dc buck-boost converter by step-by-step mathematical modelling using MATLAB SIMULINK for running a DC Motor Drive	Online tools related software and corresponding videos
8	Week 13 Oct 23rd-27th	Design and simulate Fly-back converter step-by-step mathematical modelling using MATLAB SIMULINK.	Online tools related software and corresponding videos
9	Week 14 Oct 30th- Nov 3rd	Design and analyze a single-phase inverter circuit supplied from PV panel and use load as AC induction motor .	Online tools related software and corresponding videos
10	Week 15 Nov 6th - 10th	Simulation of a three-phase inverter for feeding three phase induction motor.	Online tools related software and corresponding videos
11	Week 16 Nov 13th - 17th	Design and analysis of cyclo-converter.	Online tools related software and corresponding videos
12	Week 17 Nov 20th- 24th	Compensation Lab	Online tools related software and corresponding videos
13	Week 18 Nov 27th- Dec 1st	Compensation Lab	Online tools related software and corresponding videos
14	Week 19 Dec 4th - 8th	Final Assessment	Offline
15	Week 20 Dec 11th-15th		



COURSE ASSESSMENT METHODS:

S.No.	Mode of Assessment	Week	Duration	% Weightage
1	Internal assessment	Continuation evaluation along with lab classes	-	70
2	End Semester Assessment (Examination & Viva Voce)	Week 19/week20	120 minutes	30

COURSE EXIT SURVEY

- Feedback from the students during class committee meetings
- Anonymous feedback through questionnaire

COURSE POLICY

- **Assesment-1** is Mandatory.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

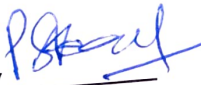


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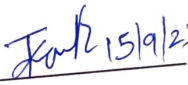
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

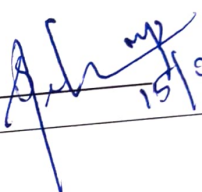
FOR APPROVAL

Course Faculty 

CC- Chairperson

 15/09/23

HOD

 15/09/23