



Department of Electrical and Electronics Engineering

COURSE PLAN – PART I			
Name of the programme and specialization	M.Tech Power Systems		
Course Title	POWER CONVERSION LABORATORY		
Course Code	EE607	No. of Credits	2
Course Code of Pre-requisite subject(s)	NIL		
Session	September 2020	Section (if, applicable)	NIL
Name of Faculty	Shelas Sathyan	Department	Electrical and Electronics Engineering
Official Email	shelassathyan@nitt.edu	Telephone No.	9561450634
Name of Course Coordinator(s) (if, applicable)	NA		
Official E-mail	-	Telephone No.	-
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Laboratory course		
Syllabus (approved in BoS)			
To simulate, test and analyse the following Power Electronic Circuits:			
List of Experiments			
<ul style="list-style-type: none"> • Single- Phase and Three- Phase Controlled Rectifier • Single- Phase Inverter • Three- Phase Inverter (120° and 180° modes of operation) • DC – DC Converters • Phase Controlled Circuits • DC and AC Circuit Breakers • Mini Project 			
COURSE OBJECTIVES			
To enable the Power System students to get an insight into the basic Power Electronic Circuits			
MAPPING OF COs with POs			
Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)		
On completion of the course, the students are expected to be able to: System Applications.			
1. Test and analyse the basic rectifier and inverter circuits	1,8, 11, 14,		



2. Test and analyse controlled circuits	1, 8, 11, 14,
3. Design basic Power Electronic Control Circuits for Power system applications	1,8,10, 11,14

COURSE PLAN – PART II

COURSE OVERVIEW

Power Electronics can be considered as the technology associated with the conversion, control and conditioning of electric power from its available form to the desired electrical form, by the application of power semiconductor devices. Power Electronics will play a dominant role in the 21st century in industrial and utility applications with increased emphasis on energy saving and efficient control of industrial processes thereby helping to preserve the environment.

The primary goal of this course is to give an in-depth laboratory experience in design, and simulation of power converters. Various power electronic converters are simulated in the laboratory to explore the characteristics of switching devices and its application in various power converters namely, dc-dc, dc-ac, ac-dc and ac-ac converters.

COURSE TEACHING AND LEARNING ACTIVITIES (Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1 (14/9/20- 18/9/20) One Session	Introduction to the laboratory and experiments	Online presentation
2	Week 2 (Two Session)	Design and simulation of AC/DC converter	Online Presentation+ Simulation
3	Week 3 (One Session)	Design and Simulation of buck converter in CCM and DCM operation	Online Presentation+ Simulation
4	Week 4 (Two Session)	Design and Simulation of boost converter in CCM and DCM operation	Online Presentation+ Simulation
5	Week 5 (Two Session)	Design and Simulation of forward converter in CCM and DCM operation	Online Presentation+ Simulation
6	Week 6 (Two Session)	Design and Simulation of fly back converter for universal power supply	Online Presentation+ Simulation
7	Week 7 (Two Session)	Design and Simulation of interleaved boost converter	Online Presentation+ Simulation



8	Week 8 (Two Session)	Design and Simulation of full bridge DC/DC converter	Online Presentation+ Simulation
9	Week 9 (Two Session)	Design and Simulation of single phase inverter Design and three phase inverter	Online Presentation+ Simulation
10	Week 10 (Two Session)	Design and Simulation of Single- Phase and Three- Phase Controlled Rectifier	Online Presentation+ Simulation
11	Week 11 (Two Session)	Design and Simulation of Single- Phase and Three- Phase Controlled Rectifier	Online Presentation+ Simulation
12	Week 12 (Two Session)	Closed Loop Operation of Power Converters	Online Presentation+ Simulation
13	Week 13 7/12/20-11/12/20	Compensation Lab	Online Mode
14	Week 14 14/12/20-18/12/20	Final Assessment	Online Mode

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

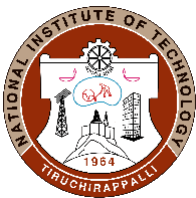
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Internal assessment - Results - Viva voce - Documentation	Weekly	One session	40%
2	Mini Project	Week 12	One Session	20%
3	Lab Assignment	Week 11	One Session	10%
CPA	Compensation Laboratory*	7/12/20-11/12/20	One session	Maximum 40%
6	Final Assessment *	14/12/20-18/12/20	One Session	30%

***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

- 1) Students feedback through class committee meetings
- 2) Feedback questionnaire from students – twice during the semester

Feedback from students on the course outcomes shall be obtained at the end of the course



COURSE POLICY (including compensation assessment to be specified)

Mode of Correspondence

1. The faculty is available for consultation during the time intimated to the students then and there.
2. All correspondence will be sent to the webmail id of the students, if required.
3. The students will be communicated through the email id: shelassathyan@nitt.edu for any academic related issues with respect to this course.

Compensation Assessment Policy

1. Attending all the assessments are mandatory for every student. If any student fails to attend a lab session or weekly internal assessment, the student can repeat that particular experiment in the slot provided and can appear for the weekly internal assessment. Attendance will not be taken for the compensation lab sessions.

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.
- 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

NIL

FOR APPROVAL


Course Faculty Shelas Sathyan CC- Chairperson Dr. Ankur Singh Rana HOD _____



Guidelines

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.