



**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

COURSE PLAN – PART I			
<b>Name of the programme and specialization</b>	M.Tech. Power Electronics		
<b>Course Title</b>	SWITCHED MODE POWER CONVERSION		
<b>Course Code</b>	EE652	<b>No. of Credits</b>	3
<b>Course Code of Pre-requisite subject(s)</b>	Power Converters/ Power Electronics		
<b>Session</b>	January 2023	<b>Section</b>	NA
<b>Name of Faculty</b>	Dr. S.Mageshwari	<b>Department</b>	Electrical and Electronics Engineering
<b>Official Email</b>	mageshwari@nitt.edu	<b>Telephone No.</b>	0431-2503260
<b>Name of Course Coordinator (if applicable)</b>	-----		
<b>Course Type</b>	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	<input type="checkbox"/> Laboratory course

**SYLLABUS (approved in BoS)**

Design constraints of reactive elements in Power Electronic Systems: Design of inductor, transformer and capacitors for power electronic applications, Input filter design.

Basic concepts and steady-state analysis of second and higher order Switched Mode power converters: PWM DC - DC Converters (CCM and DCM) - operating principles, constituent elements, characteristics, comparisons and selection criteria

Dynamic Modelling and control of second and higher order switched Mode power converters: analysis of converter transfer functions, Design of feedback compensators, current programmed, frequency programmed and critical conduction mode control

Soft-switching DC - DC Converters: zero-voltage-switching converters, zero-current-switching converters, Multi-resonant converters and Load resonant converters.

Pulse Width Modulated Rectifiers: Properties of ideal rectifier, realization of near ideal rectifier, control of the current waveform, single phase and three-phase converter systems incorporating ideal rectifiers and design examples. Non-linear phenomena in switched mode power converters: Bifurcation and Chaos

Essential Readings / Reference:

1. Simon Ang, Alejandro Oliva, Taylor & Francis, 3rd Edition, 2010.
2. Robert W. Erickson, Dragan Maksimovic, Springer Science & Business Media, 2nd Edition, 2007.



## COURSE EXIT SURVEY

1. Students' feedback through class committee meetings
2. Feedback questionnaire from students – twice during the semester
3. Feedback from students on course outcomes shall be collected at the end of the semester

## COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

### 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 NITT webmail of the students, if required.
3. The students can contact me in my office or through the email [mtechsmpls@gmail.com](mailto:mtechsmpls@gmail.com) for any academic related issues with respect to this course.

### Compensation Assessment Policy

1. Flexibility is given to the students to fix the date for each assessment convenient to majority of the students.
2. Only one instance of absence in internal assessment is permitted. Only one compensation assessment for absentees in internal assessments will be conducted.
3. The compensation assessment (CPA) is for entire syllabus and, CPA is not considered as an improvement test.

### Attendance Policy

1. All the students are expected to attend all the contact hours. Students should maintain 75% minimum physical attendance by the end of the course to attend the end semester examination.
2. Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' Grade. Student have to REDO the course.
3. A maximum of 10% attendance shall be allowed under On Duty (OD) category. OD is allowed only for the students having minimum attendance of 65%.

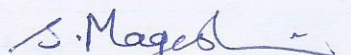
### Academic Honesty & Plagiarism

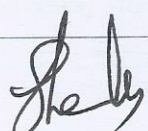
1. Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
2. The answer sheet of the student will not be evaluated and ZERO mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
3. 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.

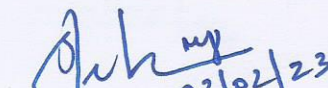
## ADDITIONAL INFORMATION

The minimum marks for passing this course and grading pattern will adhere to the regulations of the institute.

## FOR APPROVAL

  
Dr.S.Mageshwari, AP/EEE  
Course Faculty

  
CC-Chairperson

  
HoD, Dept. of EEE  
02/02/23



**Guidelines:**

- a) The number of assessments for a course shall range from 4 to 6.
- b) Every 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.
2019	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.