DEPARTMENT OF ___ECE_____

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech (ECE)**		
Course Title	**Electronic Circuits**		
Course Code	**ECMI 17**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	**ECMI13**		
Session	**July 2021**	**Section (if, applicable)**	
Name of Faculty	**Dr.R.Malmathanraj**	**Department**	**ECE**
Email	**rmathan@nitt.edu**	**Telephone No.**	**7639972187**
Name of Course Coordinator(s) (if, applicable)			
E-mail		**Telephone No.**	
Course Type	[*] **Core course**	[ ] **Elective course**	

Syllabus (approved in BoS)

Load line, operating point, biasing methods for BJT and MOSFET. Low frequency and high models of BJT and MOSFET, Small signal Analysis of CE, CS, CD and Cascode amplifier MOSFET amplifiers: Current mirrors: Basic current mirror, Cascode current mirror, Single - ended amplifiers: CS amplifier – with resistive load, diode connected load, current source load, triode load, source degeneration. CG and CD amplifiers, Cascode amplifier, Frequency response of amplifiers, Differential Amplifiers, CMRR, Differential amplifiers with active load, Two stage amplifiers Feedback concept, Properties, Feedback amplifiers, Stability analysis, Condition for oscillation, Sinusoidal oscillators. Power amplifiers - class A, class B, class AB, Biasing circuits, class C and class D

COURSE OBJECTIVES

To make the students understand the fundamentals of electronic circuits

COURSE OUTCOMES (CO)

Course Outcomes	**Aligned Programme Outcomes (PO)**
1. Illustrate about rectifiers, transistors and FET amplifiers and its biasing. Also compare the performances of its low frequency models.	**PO1-L, PO3-L, PO4-L,PO6-H, PO11-M**

2. Discuss about the frequency response of MOSFET and BJT amplifiers.	**PO2-M , PO6-M**
3. Illustrate about MOS and BJT differential amplifiers and its characteristics.	**PO2-M, PO6-H, PO11-L**
4. Discuss about the feedback concepts and construct feedback amplifier and oscillators. Also summarizes its performance parameters.	**PO2-M, PO11-L**
5. Explain about power amplifiers and its types and analyze its characteristics.	**PO2-M, PO6-H**

L- Low, M- Medium, H- High

COURSE PLAN – PART II

COURSE OVERVIEW

To make the student understand the fundamentals of electronics circuits.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	First week (3 contact Hours)	Load line, operating point, biasing methods for BJT and MOSFET	Chalk and Talk, PPT or any suitable mode
2	Second week (3 contact Hours)	Low frequency and high frequency models of BJT	
3	Third week (3 contact Hours)	Low frequency and high frequency models of MOSFET	
4	Fourth week (3 contact Hours)	Small signal Analysis of CE, CS, CD and cascade amplifiers	
5	Fifth Week (3 contact Hours)	MOSFET amplifiers: current mirrors: Basic current mirror, Cascode current mirror.	
6	Sixth Week (3 contact Hours)	Single ended amplifiers: CS amplifiers- with resistive load, diode connected load, current source load, Triode load, source degeneration.	Chalk and Talk, PPT or any suitable mode
	ASSESSMENT - I		Written Exam
7	Seventh Week (3 contact Hours)	CG and CD amplifiers, problems and Cascode amplifier.	Chalk and Talk, PPT or any suitable mode

8	Eighth Week (3 contact Hours)	Frequency response of amplifiers.	Chalk and Talk, PPT or any suitable mode
9	Ninth Week (3 contact Hours)	Frequency response of amplifiers. Contd. Two stage amplifiers, Differential Amps	Chalk and Talk, PPT or any suitable mode
10	ASSESSMENT - II		
11	Tenth Week (3 contact Hours)	Differential Amp with active load Feedback amplifiers, stability analysis	Chalk and Talk, PPT or any suitable mode
12	ASSESSMENT - III		Written Exam
13	Eleventh Week (3 contact Hours)	condition for oscillation. Sinusoidal oscillators,	Chalk and Talk, PPT or any suitable mode
14	Twelfth Week (3 contact Hours)	power amplifiers-class A, class B	
	ASSESSMENT - IV		
15	Thirteenth Week (3 contact Hours)	class AB, Biasing circuits, class C and class D	
16	COMPENSATION ASSESSMENT		Written Exam (Descriptive)
17	FINAL ASSESSMENT		Written Exam

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	ASSESSMENT – I (Descriptive)	As per Dean (Academic office) instructions	60 minutes	20%
2	ASSESSMENT – II (Mini project/Assignments/Viva(Oral/written))	Will be announced in the class	-	15%
3	ASSESSMENT – III (Descriptive)	As per Dean (Academic office) instructions	60 minutes	20%

4	ASSESSMENT – IV (Mini project/Assignments/Viva(Oral/written))	Will be announced in the class	-	15%
5	Compensation Assessment* (CPA)	As per Dean (Academic office) instructions	60 minutes	Refer course policy
6	Final Assessment *(Descriptive type of examination)	As per Dean (Academic office) instructions	180 minutes	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. The students through class representative may give their feedback at any time which will be duly addressed.
2. Feedback from the students through MIS and class committee meetings.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

1. All the students are advised to come to class regularly. All the correspondence(Schedule of the classes/ Schedule of the assessment/Course material/any other information regarding this course) will be intimated in the class only.
2. Queries (if required) to the course teacher shall be emailed to the email address specified.

COMPENSATION ASSESSMENT POLICY

1. If any student is not able to attend either one or both of the continuous assessments I and III due to genuine reason student is permitted to attend compensation assessment with only 20% weightage for both the cases.
2. At any case compensation assessment will not be considered as an improvement test.
3. **Only genuine cases of absence shall be considered.**

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

- All forms of plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. For online exams, this could be a student using unauthorized materials to answer questions on an exam, someone else helping the student complete the exam, or someone else taking the exam for the student. Zero mark to be awarded for the offenders.
- 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

Queries may also be emailed to the course faculty directly at **rmathan@nitt.edu**

FOR APPROVAL

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____

(Dr.R.K.Jeyachitra)

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. Details of compensation assessment to be specified by faculty.**

d) The passing minimum shall be as per the regulations.

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.