NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF ECE

COURSE PLAN – PART I

Name of the programme and specialization	**B.TECH (ECE)**
Course Title	**ANALOG INTEGRATED CIRCUITS LAB** (Vth semester)

Course Code	ECLR14	**No. of Credits**	**2**
Course Code of Pre-requisite subject(s)			
Session	**July - 2019**	**Section (if, applicable)**	**A**
Name of Faculty	**B.Naga Siva Prasad**	**Department**	ECE
Official Email	**naga@nitt.edu**	**Telephone No.**	6301079936
Name of Course Coordinator(s) (if, applicable)			
Official E-mail	naga@nitt.edu	**Telephone No.**	6301079936
Course Type (please tick appropriately)	✓ **Core course**	☐ **Elective course**	

Syllabus (approved in BoS)

1. Study the characteristics of negative feedback amplifier
2. Design of an instrumentation amplifier
3. Study the characteristics of regenerative feedback system-Schmitt trigger
4. Study the characteristics of integrator circuit
5. Design of a second order butterworth band-pass filter for the given higher and lower cut-off frequencies
6. Design of a high-Q Band pass self-tuned filter for a given center frequency
7. Design of a function generator- Square, Triangular
8. Design of a Voltage Controlled Oscillator 9. Design of a Phase Locked Loop(PLL) (Mini project)

COURSE OBJECTIVES

To measure the frequency response characteristics of opamp.

Analyze and design various applications of opamp

Design and construct waveform generation circuits

Design Analog Circuits using 555 timer

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO)
1. Demonstrate theoretical device/circuit operation in properly constructed analog circuits.	PO1, PO2, PO4, PO6, PO10

2. Able to correctly operate standard electronic test equipment digital multi-meters, power supplies to analyze, test, and implement digital circuits.	PO1, PO4, PO2, PO6, PO10
3. Able to correctly analyze a circuit and compare its theoretical performance to actual performance.	PO6, PO2, PO4, PO10, PO1
4. Able to apply troubleshooting techniques to test digital circuits.	PO1, PO10, PO4, PO6, PO2

COURSE PLAN – PART II

COURSE OVERVIEW

In Analog integrated circuit laboratory, students can understand the characteristics of Operational amplifier. The purpose of the course is to design the linear and non linear applications of an opamp. To compare the working of multi vibrators using special application IC 555 and general purpose opamp. Students can gain knowledge on working principle and the function of application specific ICs such as Voltage regulators, PLL and its application in communication.

COURSE TEACHING AND LEARNING ACTIVITIES   (Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week-1	Inverting, Non Inverting and unity gain Amplifiers, and their time domain and frequency domain responses	Lab
2	Week-2	Study the characteristics of integrator and differentiator circuit, , and their time domain and frequency domain responses	Lab
3	Week-3	a. Design of an instrumentation amplifier b. Design of Precision Rectifiers	Lab
4	Week-4	a. Universal active Filter b. Quadrature oscillator	Lab
5	Week-5	Applications of Analog multipliers	Lab

6	Week-6	Study the characteristics of Schmitt trigger and its applications such as Mono stable and Astable multivibrators	Lab
7	Week-7	VCO as FM Generator	Lab
9	Week-8	Design of a Phase Locked Loop(PLL)	Lab
10	Week-9	IC555 timer applications	Lab
11	Week-10	Weinbridge and RC Phase Shift and Gyrator Oscillators.	Lab

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Record	To be submitted every next week after completion of experiment		15
2	Viva Exam	Two weeks prior to end semester	1 Hr	20
3	Team Project	One week prior to end semester	-	30
4	End semester evaluation		90 mins	35

*mandatory; refer to guidelines on page 4

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

1. Feedback from the students during Class committee meetings
2. Anonymous feedback through questionnaire

COURSE POLICY (including compensation assessment to be specified)

MODE OF CORRESPONDENCE (email/phone etc)

1. All the students are advised to come to the class regularly. All the correspondence (schedule of classes/ schedule of assignment/ course material/ any other information regarding this course) will be intimated in the class only.

COMPENSATION ASSESSMENT POLICY

Not applicable.

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.
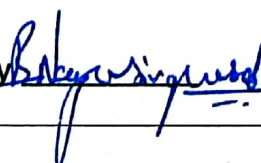
ACADEMIC DISHONESTY & PLAGIARISM

➢ 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

Students can approach the course faculty regarding the doubts in subject in the Department during the office hours with prior information about it either in the class or through E-mail (naga@nitt.edu).

FOR APPROVAL

Course Faculty _____ CC- Chairperson _____ HOD _____

(Dr. R. K. Jeyachitra)