Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.

[AFFILIATED TO BPUT, ODISHA]

www.coeb.ac.in

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD-ON COURSE: Design and Analysis of Oscillator Circuits

[Programme: B.Tech, ETC]

Course Objectives:

To introduce some basic fundamental ideas of oscillator, understand the noise in oscillator, understand computer simulation in SPICE..

SYLLABUS

Total Lecture Hours: 40

MODULE-I:

[10 Hours]

Fundamentals: Example, Mismatch, Relation to classic oscillator theory, Loaded Q, Resonator as matching network, pulling crystal oscillator, SAW resonator, emitter resistance in negative-R oscillator, Stability factor in oscillator design.

MODULE-II

[10 Hours]

Limiting, starting and biasing: Limiting, Class-A operation, Prediction output level, output harmonic content, starting, starting time, class C power oscillator, bias time constant, Frequency effects of limiting, one battery biasing, dual supply biasing, hybrid biasing.

MODULE-III

[10 Hours]

Noise: Amplifier noise, power supply noise, single side band phase noise, negative resistance oscillator noise, oscillator noise, oscillator noise nomograph, varactor modulation phase noise, typical oscillator noise performance, low noise design suggestion.

MODULE-III

[10 Hours]

Computer techniques: spice analysis of oscillators, Oscillator simulation, 100 MHz loop oscillator measured data, device selection, frequency tuning linearity, circuit enhancement, Broad tuning UHF VCO example, spice analysis of UHF VCO

PRINCIPAL
College of Engineering Bhubaneswar

Course Outcomes: After completion of the course, the students will be able to

- CO1: Explain the basic principles of oscillation, using resonator and negative resistance.
- CO2: Describe the use of different waveform limiting techniques.
- CO3: Analyze the stability of oscillator circuits and identify potential sources of instability.
- CO4: Define phase noise and jitter in oscillator circuits and their impact on signal quality.
- CO5: Explore the simulation of oscillators in SPICE.

Evaluation Process:

- 1. Attendance for the course is 75%, which is mandatory.
- 2. Minimum qualifying marks percentage for the course is 50.
- 3. Certificate will be issued after successful completion of course and assessment processes.

Learning resources:

Suggested Books:

- 1. Foundations of Oscillator Circuit Design by Guillermo Gonzalez
- 2. Oscillator design and computer simulation by Randall W Rhea.
- 3. Oscillator circuits by Rudolf F Graf

Other Sources:

e-Learning Resources:

- 1. Nonlinear analysis of the Colpitts oscillator and applications to design by Maggio, Gian Mario, Oscar De Feo, and Michael Peter Kennedy.
- 2.https://www.youtube.com/watch?v=5mToA9h_KJA

Design and Developed by: Prof. Snehasis Dey and Prof. Subrat Kumar Mohanty

College of Engineering Bhubanesy

COEB, Bhubaneswar



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATIONS ENGINEERING COLLEGE OF ENGINEERING BHUBANESWAR

Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.

[AFFILIATED TO BPUT, ODISHA]

www.coeb.ac.in

NOTICE

ADD-ON/CERTIFICATE COURSE

Ref No: COEB/ETC/2022/12

Date: 01/10/2022

It is for the information of all the students of 3rd/5th/7th semester that the classes for the Add-On/Certificate Courses will commence as per the time table given below. The registration process for the course will start from 10/10/2022. The interested students to enroll themselves for the course are advised to contact the concerned Course Coordinators for the details.

Semester	Course Title	Course Coordinator	Date of Commencement
	Design and Analysis of	Prof. Arpit Sourav	
0.1	Oscillator Circuits	Mohapatra	
3rd			17/10/2022
	ECG signal processing	Prof. Debarchana Jena	17/10/2022
	using Raspberry Pi		//
5 th			
	Animal sound processing	Prof. Anwesha Halder	17/10/2022
7th			

The class timing will be from 5.30 pm to 7.30 pm.

Copy to:

- 1. Office of the Chairman / Vice-Chairman for kind information.
- 2. Office of the Executive Director for kind Information.
- 3. Office of the Registrar for kind Information.
- 3. Office of the Principal for kind information.
- 4. Departmental Notice Board.
- 5. Guard File

Head of the Department

Dept. of ETC Engg.

COEB, Bhubaneswar

partment

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB) ADD-ON COURSE

STUDENT ENROLLMENT SHEET

Name of the Department: Electronics and	Telecommunication Engineering
Course Title: Design and Analysis of (Oscillator Circuits
Semester: 3rd	Academic Year: 2022-23

Student's Declaration/Undertaking

- 1. I do hereby undertake to participate in the above mentioned add on course.
- 2.I do hereby, promise to abide by the admissible rules and regulations, connecting discipline, attendance, etc. of the department, and also to follow the code of Conduct prescribed for the students of the institute, as in force from time to time.

SL. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Signature of the student
1	2101219120	AMAN KUMAR	Aman Kumer
2	2101219121	ARPITA KUMARI MISHRA	A. II Mine A A A C.
3 .	2101219122	GAUTAM KUMAR ROUT	Gordan kumar Rout
4	2101219123	JAGANNATH GIRI	
5	2101219124	NANDINI ROUT	Nandani Rout
6	2101219125	SMARANIKA DASH	Smaranika Dash
7	2101219271	ARPIT ANWESH SAHOO	A
8	2101219272	SACHIN DAS	Sachin Das
9	2101219273	SASWATI PANDA	Saswari Panda

PRINCIPAL
College of Engineering Bhubaneswar



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING COLLEGE OF ENGINEERING BRUBANESWAR (COEB)

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Semester: 3rd

Name of the Course: Design and Analysis of Oscillator Circuits

Programme: B.Tech in Electronics and Telecommunications

Sheet No.

Academic Year: 2022-23 Course Code (if any):

Attrita humanithal Annita lunari Historia nedlanke the 20/10/12022 Maranina Das Sagarall ~garrathin Sahra mananila Day 10 2022 Date & Signature of the Student Iron to war Histor Armin Kurner Halin againathairi 18 10 2022 manamika Dash SO WALT DONOL sogminate Cir 17/10/2022 Vachin H-CDI+ Date: NAME OF THE STUDENT ARPITA KUMARI MISHRA GAUTAM KUMAR ROUT ARPIT ANWESH SAHOO Signature of the Course Coordinator SMARANIKA DASH AGANNATH GIRI SASWATI PANDA VANDINI ROUT AMAN KUMAR SACHIN DAS 40 houns 2101219120 Enrollment No. 2101219122 2101219123 2101219273 2101219121 2101219272 2101219124 2101219125 2101219271 Reg No./ Duration:



COLLEGE OF ENGINEERING BHUBANESWAR (COEB) DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Semester: 3rd

Academic Year: 2022-23

Sheet No.

Date & Signature of the Student Course Code (if any): Name of the Course: Design and Analysis of Oscillator Circuits Programme: B.Tech in Electronics and Telecommunications Duration: 40 hough

NO.

1				6	100). 	1		-		5		
D-12	Date: "	28/10/2022	ANG KEEK	Arvita Momeni Hahn	Le Chritonney No.	Las garate an	Som of the	Smanancka dan	Arost A Sano Arost A Saho	Bachin, Dus,	Sawati Penels,	A. Mobayechta	
D. T.	Dale:	26 10/2012 27/10/2022 28/10/2022	Kinny Kinny	Arrife Memory Mile	Souton Ku seri	Fagan nathair	. Nondoni Reul	I marcinilea dash	Arost A- Sano	,	Saywal Punch	A. Mohapatra	
1	Date: V	26/10/2012	James Kurrer	Arroita bannoni Maha Aroita Lumai Maha Aronito bannani Mala Aroita busmui Haha	lauranow, mish forton mu. Ry sha bollon Ku Mishe Christon by Nisher	Fagannathlin	Dan ovelle	Part Sonavanita darb I marcinita darb Imanancia darb	Arcott A-So, how	Suchin Das	Saguada Ponda Sarusal : Penela	A. Mohapoetta A. Mohapoetto A. Mohapoetta A. Mohapoetta	
Dotos	Date:	21/10/2022	Inen Kuny	Arryita harmoni Witha	Gautanow, pich	Jagamath hin	Nardon Reu	Imenanila Nash	Arroll A-Sahro	Sachin Das	Sasuad Panda	A. Mohapochia	
NAME OF THE STIIDENT	INAIME OF THE STODEN		AMAN KUMAR	ARPITA KUMARI MISHRA	GAUTAM KUMAR ROUT	JAGANNATH GIRI	NANDINI ROUT	SMARANIKA DASH	ARPIT ANWESH SAHOO	SACHIN DAS	SASWATIPANDA	Signature of the Course Coordinator	
Dec No.	Neg. 140.	Enrollment No.	2101219120	2101219121	2101219122	2101219123	2101219124	2101219125	2101219271	2101219272	2101219273	Signature c	

College of Engineering Bhubaneswar



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING COLLEGE OF ENGINEERING BRUBANESWAK (CUEB)

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Semester: 3rd

Programme: B.Tech in Electronics and Telecommunications

Academic Year: 2022-23

Sheet No.

ITTI to Commans Mist ACMIT AL SANO MDI to Wuman Widow 17/11/20 22 Date & Signature of the Student Course Code (if any): Parita Kuman Misha ATTO, to humanin Micha 15/11/2012 Date: maran ha Dash 14 11/2022 Name of the Course: Design and Analysis of Oscillator Circuits 100 NAME OF THE STUDENT ARPITA KUMARI MISHRA SAUTAM KUMAR ROUT RPIT ANWESH SAHOO Signature of the Course Coordinator SMARANIKA DASH AGANNATH GIRI SASWATI PANDA JANDINI ROUT **AMAN KUMAR** SACHIN DAS hour Enrollment No. 2101219120 2101219121 2101219122 2101219123 2101219124 2101219125 2101219272 2101219273 210121927 Duration:



PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024





Certificate of Completion

has successfully complete	of Elecrtonics and Telecommunication	This is to certify that Mr./Ms.
has successfully completed the ADD-ON Course titled	Telecommunication	
Design and Analysis of Oscillator Circuits	semester <u>Third</u> bearing registration n	ARPITA KUMARI MISHRA
of Oscillator Circuits	stration number 2101219121	student of the Department

conducted at College of Engineering Bhubaneswar in the academic year_

2022-23

TRUE COPY

The second secon

Course-Coordinator

X

Principal

they by

PRINCIPAL College of Engineering Bhubdreswar



PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024





Oprificate of Oampletion

Design and Analysis of Oscillator Circuits	has successfully completed the ADD-ON Course titled
semester Third bearing registration number 2101219122	of Electronics and Telecommunication semes
ROUT student of the Department	This is to certify that Mr./MsGAUTAM KUMAR ROUT

TRUE COPY

conducted at College of Engineering Bhubaneswar in the academic year_

2022-23

Course-Coordinator

Principal

E

PRINCIPAL College of Engineering Bhubarres



PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024





Octificate of Oempletion

าลร	- 일	• <u>∃</u>
has successfully completed the ADD-ON Course titled _	of Elecrtonics and Telecommunication	This is to certify that Mr./Ms. JAGANNATH GIRI
	semester	GIRI
Design a	Third	
Design and Analysis of Oscillator Circuits	semester Third bearing registration number	stu
ircuits	2101219123	student of the Department

TRUE COPY

conducted at College of Engineering Bhubaneswar in the academic year_

Course-Coordinator

Principal

2022-23

PRINCIPAL College of Engineering Bhubanesw



PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024





Oertificate of Oempletion

has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits	of Electronics and Telecommunication semester Third bearing registration number 2101219124	This is to certify that Mr./Ms. NANDINI ROUT student of the Department
uits	2101219124	_{it} of the Department

TRUE COPY

conducted at College of Engineering Bhubaneswar in the academic year _____2022-23___

Course-Coordinator

throad the

PRINCIPAL
College of Engineering Bhubangewar

Principal



PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024





Certificate of Completion

has	of I	拱
has successfully completed the ADD-ON Course titled	Elecrtonics and Telecommunication	This is to certify that Mr./Ms. SUBHALAXMI SAHOO
ADD-ON Course titled	ommunication	SUBHALAXM
	semester Fifth	AI SAHOO
ECG signal processing using Raspberry Pi	semester Fifth bearing registration number 2001219245	, student of the Department
		ţ

TRUE COPY

conducted at College of Engineering Bhubaneswar in the academic year_

2022-23

Course-Coordinator

Principal

PRINCIPAL PRINCIPAL College of Engineering Enturange