COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
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

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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

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H.O.D, ETC Engg.
H.O.D
Dept. of ETC Engg.
COEB, Bhubaneswar

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

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

Head of the Department
H.O.D
Dept. of ETC Engg.
COEB, Bhubaneswar

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

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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 Kumar
2	2101219121	ARPITA KUMARI MISHRA	Arpita Kumari Mishra
3	2101219122	GAUTAM KUMAR ROUT	Gautam Kumar Rout
4	2101219123	JAGANNATH GIRI	Jagannath Giri
5	2101219124	NANDINI ROUT	Nandini Rout
6	2101219125	SMARANIKA DASH	Smaranika Dash
7	2101219271	ARPIT ANWESH SAHOO	Arpit Anwesh Sahoo
8	2101219272	SACHIN DAS	Sachin Das
9	2101219273	SASWATI PANDA	Saswati Panda

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No._____

Programme: B.Tech in Electronics and Telecommunications **Semester: 3rd** **Academic Year: 2022-23**

Name of the Course: Design and Analysis of Oscillator Circuits **Course Code (if any):**

Duration : 40 hours			Date & Signature of the Student			
SL. NO.	**Reg. No./ Enrollment No.**	**NAME OF THE STUDENT**	**Date:** 17/10/2022	**Date:** 18/10/2022	**Date:** 19/10/2022	**Date:** 20/10/2022
1	2101219120	AMAN KUMAR	Aman Kumar	Aman Kumar	Aman Kum	Aman Kum
2	2101219121	ARPITA KUMARI MISHRA	Arpita Kumari Mishra	Arpita Kumari Mishra	Arpita Kumari Mi	Arpita Kumari Mishra
3	2101219122	GAUTAM KUMAR ROUT	Gautam K. Rout	Gautam K. Rout	Gautam Ku. Rout	Gautam Kum. Rout
4	2101219123	JAGANNATH GIRI	Jagannath Giri	Jagannath Giri	Jagannath Giri	Jagannath Giri
5	2101219124	NANDINI ROUT	Nandini Rout	Nandini Rout	Nandini Rout	Nandini Rout
6	2101219125	SMARANIKA DASH	Smaranika Dash	Smaranika Dash	Smaranika Dash	Smaranika Dash
7	2101219271	ARPIT ANWESH SAHOO	Arpit A Sahoo	Arpit A Sahoo	Arpit A Sahoo	Arpit A Sahoo
8	2101219272	SACHIN DAS	Sachin Das		Sachin Das	Sachin Das
9	2101219273	SASWATI PANDA	Saswati Panda	Saswati Panda	Saswati Panda	Saswati Panda
Signature of the Course Coordinator			A. Mohapatra	A. Mohapatra	A. Mohapatra	A. Mohapatra

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No._____

Programme: B.Tech in Electronics and Telecommunications **Semester: 3rd** **Academic Year: 2022-23**
Name of the Course: Design and Analysis of Oscillator Circuits **Course Code (if any):**

Duration : 40 hours			Date & Signature of the Student			
SL. NO.	**Reg. No./ Enrollment No.**	**NAME OF THE STUDENT**	**Date:** 21/10/2022	**Date:** 26/10/2022	**Date:** 27/10/2022	**Date:** 28/10/2022
1	2101219120	AMAN KUMAR	Aman Kumar	Aman Kumar	Aman Kumar	Aman Kumar
2	2101219121	ARPITA KUMARI MISHRA	Arpita Kumari Mishra	Arpita Kumari Mishra	Arpita Kumari Mishra	Arpita Kumari Mishra
3	2101219122	GAUTAM KUMAR ROUT	Gautam Kumar Rout	Gautam Kumar Rout	Gautam Kumar Rout	Gautam Kumar Rout
4	2101219123	JAGANNATH GIRI	Jagannath Giri	Jagannath Giri	Jagannath Giri	Jagannath Giri
5	2101219124	NANDINI ROUT	Nandini Rout	Nandini Rout	Nandini Rout	Nandini Rout
6	2101219125	SMARANIKA DASH	Smaranika Dash	Smaranika dash	Smaranika dash	Smaranika dash
7	2101219271	ARPIT ANWESH SAHOO	Arpit A- Sahoo	Arpit A Sahoo	Arpit A- Sahoo	Arpit A- Sahoo
8	2101219272	SACHIN DAS	Sachin Das	Sachin Das		Sachin Das
9	2101219273	SASWATI PANDA	Saswati Panda	Saswati Panda	Saswati Panda	Saswati Panda.
Signature of the Course Coordinator			A. Mohapatra	A. Mohapatra	A. Mohapatra	A. Mohapatra

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No._____

Programme: B.Tech in Electronics and Telecommunications **Semester: 3rd** **Academic Year: 2022-23**

Name of the Course: Design and Analysis of Oscillator Circuits **Course Code (if any):**

Duration : 40 hours			Date & Signature of the Student			
SL. NO.	**Reg. No./ Enrollment No.**	**NAME OF THE STUDENT**	**Date:** 14/11/2022	**Date:** 15/11/2022	**Date:** 17/11/2022	**Date:** 18/11/2022
1	2101219120	AMAN KUMAR	Aman Kumar	Aman Kumar	Aman Kumar	Aman Kumar
2	2101219121	ARPITA KUMARI MISHRA	Arpita Kumari Mishra	Arpita Kumari Mishra	Arpita Kumari Mishra	Arpita Kumari Mishra
3	2101219122	GAUTAM KUMAR ROUT	Gautam Kr Mishra	Gautam Kr Mishra	Gautam Kr Mishra	Gautam Kr Mishra
4	2101219123	JAGANNATH GIRI	Jagannath Giri	Jagannath Giri	Jagannath Giri	Jagannath Giri
5	2101219124	NANDINI ROUT	Nandini Rout	Nandini Rout	Nandini Rout	Nandini Rout
6	2101219125	SMARANIKA DASH	Smaranika Dash	Smaranika Dash	Smaranika Dash	Smaranika Dash
7	2101219271	ARPIT ANWESH SAHOO	Arpit A. Sahoo	Arpit A. Sahoo	Arpit A. Sahoo	Arpit A. Sahoo
8	2101219272	SACHIN DAS	Sachin Das	Sachin Das	Sachin Das	
9	2101219273	SASWATI PANDA	Saswati Panda	Saswati Panda	Saswati Panda	Saswati Panda
Signature of the Course Coordinator			A. Mohapatra	A. Mohapatra	A. Mohapatra	A. Mohapatra

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Certificate of Completion

This is to certify that Mr./Ms. ARPITA KUMARI MISHRA, student of the Department of Elecrtonics and Telecommunication semester Third bearing registration number 2101219121 has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits conducted at College of Engineering Bhubaneswar in the academic year 2022-23

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Course-Coordinator

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Certificate of Completion

This is to certify that Mr./Ms. GAUTAM KUMAR ROUT, student of the Department of Elecrtonics and Telecommunication semester Third bearing registration number 2101219122 has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits conducted at College of Engineering Bhubaneswar in the academic year 2022-23

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Course-Coordinator

Principal

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Certificate of Completion

This is to certify that Mr./Ms. JAGANNATH GIRI, student of the Department of Elecrtonics and Telecommunication semester Third bearing registration number 2101219123 has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits conducted at College of Engineering Bhubaneswar in the academic year 2022-23.

TRUE COPY

Course-Coordinator

Principal

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Certificate of Completion

This is to certify that Mr./Ms. NANDINI ROUT, student of the Department of Elecrtonics and Telecommunication semester Third bearing registration number 2101219124 has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits conducted at College of Engineering Bhubaneswar in the academic year 2022-23.

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Course-Coordinator

Principal

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Certificate of Completion

This is to certify that Mr./Ms. SUBHALAXMI SAHOO, student of the Department of Elecrtonics and Telecommunication semester Fifth bearing registration number 2001219245 has successfully completed the ADD-ON Course titled ECG signal processing using Raspberry Pi conducted at College of Engineering Bhubaneswar in the academic year 2022-23.

TRUE COPY

Course-Coordinator

Principal

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