



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 : ECG signal processing using Raspberry Pi

[Programme: B.Tech, ETC]

Course Objectives:

To introduce some basic fundamental of ECG signal and its characteristics, introduce the raspberry Pi programming using Python components.

SYLLABUS

Total Lecture Hours : 30

MODULE-I:

[10 Hours]

Concurrent, coupled and correlated processes - illustration with case studies - Adaptive and optimal filtering - Modeling of Biomedical signals - Detection of biomedical signals in noise - removal of artifacts of one signal embedded in another - Maternal-Fetal ECG - Muscle-contraction interference. Event detection - case studies with ECG & EEG - Independent component Analysis - Cocktail party problem applied to EEG signals - Classification of biomedical signals.

MODULE-II

[10 Hours]

Cardio vascular applications : Basic ECG - Electrical Activity of the heart- ECG data acquisition – ECG parameters & their estimation - Use of multiscale analysis for ECG parameters estimation - Noise & Artifacts- ECG Signal Processing: Baseline Wandering, Power line interference, Muscle noise filtering – QRS detection - Arrhythmia analysis - Data Compression: Lossless & Lossy- Heart Rate Variability – Time Domain measures - Heart Rhythm representation - Spectral analysis of heart rate variability - interaction with other physiological signals.

MODULE-III

[10 Hours]

Introduction to Raspberry Pi, Basics of Raspberry Pi, implementation of digital filters, implementation of wavelet transform, noise suppression program implementation, temperature impact on signal simulation.


PRINCIPAL
College of Engineering Bhubaneswar

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

CO1 Explain the basic principles of ECG recording and instrumentation.

CO2: Explain the different filtering algorithms of digital filter

CO3: Write the basic program of filters in python.

CO4: Implement the filter program in Raspberry Pi.

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. ECG for Beginners by Anandaraja Subramanian, Raja J Selvaraj.
2. Advances Biomedical Signal Processing & Signal Modeling, Bruce, Wiley, 2001.
3. Bioelectrical Signal Processing in Cardiac & Neurological Applications, Sörnmo, Elsevier
4. Programming the Raspberry Pi by Simon Monk

Other Sources:

e-Learning Resources:

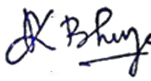
1. https://www.youtube.com/watch?v=V18ToxU_X6w&list=PLyqSpQzTE6M-x7fVuO_gdHIBdlsfqgITd

Design and Developed by: Prof. Subrat Kumar Mohanty and Prof. Asit Kumar Satapathy




Principal

PRINCIPAL
College of Engineering Bhubaneswar



PRINCIPAL
College of Engineering Bhubaneswar



H.O.D, ETC Engg.
H.O.D
Dept. of ETC Engg.
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/2021/ 07

Date: 25/11/2021

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 **26/11/2021**. 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. Prasant Sethi	06/12/2021
5th	ECG signal processing using Raspberry Pi	Prof . Asit Kumar Satapathy	06/12/2021
7th	Animal sound processing	Prof. Subrat Kumar Mohanty	06/12/2021

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

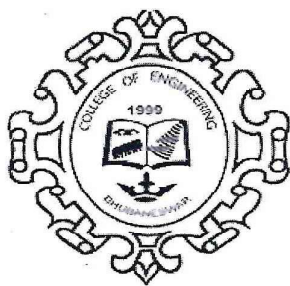

Head of the Department
H.C.B.
Dept. of ETC Engg.
COEB, Bhubaneswar

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


PRINCIPAL
College of Engineering Bhubaneswar

Head of the Department



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

ADD-ON COURSE

STUDENT ENROLLMENT SHEET

Name of the Department: Electronics and Telecommunication Engineering	
Course Title: ECG signal processing using Raspberry pi	
Semester: 5th	Academic Year: 2021-22

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	1901219124	ANAND KANHAR	Anand Kanhar
2	1901219125	APOORBA KUMAR JENA	Apoorba Kumar Jena
3	1901219126	BARISA SOREN	Barisa Soren
4	1901219127	BHUPEN PRABASH SURJULIA	Bhupen Prabash Surjulia
5	1901219128	CHANDAN KUMAR PANIGRAHI	Chandan K. Panigrahi
6	1901219129	INDRABATI MINZ	Indrabati
7	1901219130	JAGANNATH SANTA	Jagannath Santa
8	1901219131	MANSI MAYURI	Mansi Mayuri
9	1901219132	OMPRAKASH ROUT	Ompakash Rout
10	1901219133	PRIYABRATA ROUT	Priyabrata Rout
11	1901219134	RAKESH KUMAR JENA	Rakesh K. Jena
12	1901219135	ROSHAN KUMAR KAR	Roshan Kumar Kar
13	1901219136	SAHEL SUMAN PATTANAYAK	Sahel Suman Pattanayak
14	1901219137	SANGRAM NAYAK	Sangram Nayak
15	1901219138	SHREEBATS PONDU	Shreebatsa pondu
16	1901219139	SISIR KUMAR DALAI	Sisir Kumar Dalai
17	1901219140	SOUBHAGYA KUND	Soubhagya Kund
18	1901219141	SOURAV RANJAN SAHOO	Sourav Ranjan Sahoo
19	1901219142	SRIKUMAR BIBEKANANDA DAS	Srikumar Bibekananda Das
20	1901219143	KARAN JENA	Karan Jena
21	1901219144	SURAKSHYA SWAIN	Surakshya Swain
22	1901219254	ABHISHEK DASH	Abhishek Dash
23	1901219255	AYESHA SWAIN	Ayesha Swain
24	1901219256	MILAN RAY	Milan Ray
25	1901219257	PRASIT KUMAR SATAPATHY	Prasit Kumar Satapathy
26	1901219258	PREETISUDHA MOHANTY	Preetisudha Mohanty
27	1901219259	SUBHAM PRADHAN	S. Pradhan
28	1901219260	SUBHRANSU RANJAN BISWAL	Subhransu Ranjan Biswal
29	1901219261	SUKRITI PRADHAN	Sukriti Pradhan

K. Bhuje

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/ CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: ECG signal processing using Raspberry Pi

Semester: 5th Academic Year: 2021-22

Duration : **30 hours**

Date & Signature of the Student

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	1901219124	ANAND KANHAR	6/12/2021	7/12/2021	8/12/2021	9/12/2021
2	1901219123	APOORBA KUMAR JENA	Apoorba K. Jena	Apoorba K. Jena	Apoorba K. Jena	Apoorba K. Jena
3	1901219128	BARISA SOREN	Barisa Soren	Barisa Soren	Barisa Soren	Barisa Soren
4	1901219127	BHUPEN PRABASH SUREJULLA	Bhupen P. Surejulla	Bhupen P. Surejulla	Bhupen P. Surejulla	Bhupen P. Surejulla
5	1901219128	CHANDAN KUMAR PANIGRAHI	Chandan K. Panigrahi	Chandan K. Panigrahi	Chandan K. Panigrahi	Chandan K. Panigrahi
6	1901219129	INDRABATI MINZ	Indrabati Minz	Indrabati Minz	Indrabati Minz	Indrabati Minz
7	1901219130	JAGANNATH SANTHA	Jagannath Santh	Jagannath Santh	Jagannath Santh	Jagannath Santh
8	1901219131	MANASI MAYURI	Manasi Mayuri	Manasi Mayuri	Manasi Mayuri	Manasi Mayuri
9	1901219132	OMPRAKASH ROUT	Omprakash Rout	Omprakash Rout	Omprakash Rout	Omprakash Rout
10	1901219133	PRITYABRATA ROUT	Prityabrata Rout	Prityabrata Rout	Prityabrata Rout	Prityabrata Rout
11	1901219134	RAKESH KUMAR JENA	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena
12	1901219135	ROSHAN KUMAR KAR	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar
13	1901219136	SAHEL SUJAN PATTANAYAK	Sahel Sujan Pattanayak	Sahel Sujan Pattanayak	Sahel Sujan Pattanayak	Sahel Sujan Pattanayak
14	1901219137	SANGRAM NAYAK	Sangram Nayak	Sangram Nayak	Sangram Nayak	Sangram Nayak
15	1901219138	SHREEBATSA PONDI	Shreebatsa Pondi	Shreebatsa Pondi	Shreebatsa Pondi	Shreebatsa Pondi
16	1901219139	SISIR KUMAR DALAI	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai
17	1901219140	SOUBHAGYA KUND	Soubhagya Kund	Soubhagya Kund	Soubhagya Kund	Soubhagya Kund
18	1901219141	SOURAV RANJAN SAHOO	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo
19	1901219142	SRIKUMAR BIBEKANANDA DAS	Srikumar Bibekananda Das	Srikumar Bibekananda Das	Srikumar Bibekananda Das	Srikumar Bibekananda Das
20	1901219143	KARAN JENA	Karan Jena	Karan Jena	Karan Jena	Karan Jena
21	1901219144	SURAKSHYA SWAIN	Surakshya Swain	Surakshya Swain	Surakshya Swain	Surakshya Swain
22	1901219254	ABHISHEK DASH	Abhishek Dash	Abhishek Dash	Abhishek Dash	Abhishek Dash
23	1901219255	AYESHA SWAIN	Ayesha Swain	Ayesha Swain	Ayesha Swain	Ayesha Swain
24	1901219256	MILAN RAY	Milan Ray	Milan Ray	Milan Ray	Milan Ray
25	1901219257	PRASIT KUMAR SATAPATHY	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy
26	1901219258	PREETISUDHA MOHANTY	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty
27	1901219259	SUBHAM PRADHAN	Subham Pradhan	Subham Pradhan	Subham Pradhan	Subham Pradhan
28	1901219260	SUBHRANSU RANJAN BISWAL	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal
29	1901219261	SUKRITI PRADHAN	Sukriti Pradhan	Sukriti Pradhan	Sukriti Pradhan	Sukriti Pradhan

Signature of the Course Coordinator

A. Satapathy

A. Satapathy

A. Satapathy

A. Satapathy

(Signature)
 PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON / CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: ECG signal processing using Raspberry Pi

Semester: 5th Academic Year: 2021-22
 Course Code (if any):

Duration : **30 hours**

Date & Signature of the Student

Sl. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	1901219124	ANAND KANHAR	10/12/2021	13/12/2021	14/12/2021	15/12/2021
2	1901219125	APOORBA KUMAR JENA	Apoorba k.jena	Apoorba k.jena	Apoorba k.jena	Apoorba k.jena
3	1901219126	BARISA SOREN	Barisa Soren	Barisa Soren	Barisa Soren	Barisa Soren
4	1901219127	BHUPEN PRABASH SURJULA	Bhupen P.Suryula	Bhupen P.Suryula	Bhupen P.Suryula	Bhupen P.Suryula
5	1901219128	CHANDAN KUMAR PANIGRAHI	Chandan k.Panigrahi	Chandan k.Panigrahi	Chandan k.Panigrahi	Chandan k.Panigrahi
6	1901219129	INDRABATI MINZ	Indrabati	Indrabati	Indrabati	Indrabati
7	1901219130	JAGANNATH SANTHA	Jagannath Saha	Jagannath Saha	Jagannath Saha	Jagannath Saha
8	1901219131	MANSI MAYURI	Mansi Mayuri	Mansi Mayuri	Mansi Mayuri	Mansi Mayuri
9	1901219132	OMPRAKASH ROUT	OMPRAKASH ROUT	OMPRAKASH ROUT	OMPRAKASH ROUT	OMPRAKASH ROUT
10	1901219133	PRIYAKRATA ROUT	Priyabrata Rout	Priyabrata Rout	Priyabrata Rout	Priyabrata Rout
11	1901219134	RAKESH KUMAR JENA	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena
12	1901219135	ROSHAN KUMAR KAR	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar
13	1901219136	SAHEL SUMAN PATTANAYAK	Sahel Suman Pattanayak	Sahel Suman Pattanayak	Sahel Suman Pattanayak	Sahel Suman Pattanayak
14	1901219137	SANGRAM NAYAK	Sangram Nayak	Sangram Nayak	Sangram Nayak	Sangram Nayak
15	1901219138	SHREEBATSIA PONDU	Shreebatsia Pondit	Shreebatsia Pondit	Shreebatsia Pondit	Shreebatsia Pondit
16	1901219139	SISIR KUMAR DALAI	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai
17	1901219140	SUBHAAGYA KUND	Subhaagya Kund	Subhaagya Kund	Subhaagya Kund	Subhaagya Kund
18	1901219141	SOURAV RANJAN SAHOO	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo
19	1901219142	SRIKUMAR BIBEKANANDA DAS	Srikumar Bibekanda	Srikumar Bibekanda	Srikumar Bibekanda	Srikumar Bibekanda
20	1901219143	KARAN JENA	Karan Jena	Karan Jena	Karan Jena	Karan Jena
21	1901219144	SURAKSHYA SWAIN	Surakshya Swain	Surakshya Swain	Surakshya Swain	Surakshya Swain
22	1901219254	ABHISHEK DASH	Abhishek Dash	Abhishek Dash	Abhishek Dash	Abhishek Dash
23	1901219255	AYESHA SWAIN	Ayesha Swain	Ayesha Swain	Ayesha Swain	Ayesha Swain
24	1901219256	MILAN RAY	Milan Ray	Milan Ray	Milan Ray	Milan Ray
25	1901219257	PRASIT KUMAR SATAPATHY	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy
26	1901219258	PREETISUDHA MOHANTY	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty
27	1901219259	SUBHAM PRADHAN	Subham Pradhan	Subham Pradhan	Subham Pradhan	Subham Pradhan
28	1901219260	SUBHRANSU RANJAN BISWAL	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal
29	1901219261	SUKRITI PRADHAN	Sukrithi Pradhan	Sukrithi Pradhan	Sukrithi Pradhan	Sukrithi Pradhan

Signature of the Course Coordinator

A. Satapathy

PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/ CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: ECG signal processing using Raspberry Pi
 Semester: 5th Academic Year: 2021-22
 Course Code (if any):

Date & Signature of the Student

Duration : **30 hours**

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	1901219124	ANAND KANHAR	16/12/2021	17/12/2021	20/12/2021	21/12/2021
2	1901219125	APOORBA KUMAR JENA	Anand Kanhar	Apoorba K. Jena	Anand Kanhar	Anand Kanhar
3	1901219126	BARISA SOREN	Barisa Soren	Barisa Soren	Barisa Soren	Barisa Soren
4	1901219127	BHUPEN PRABASH SURJULA	Bhupen P. Suryula	Bhupen P. Suryula	Bhupen P. Suryula	Bhupen P. Suryula
5	1901219128	CHANDAN KUMAR PANIGRAHI	Chandan K. Panigrahi	Chandan K. Panigrahi	Chandan K. Panigrahi	Chandan K. Panigrahi
6	1901219129	INDRABATI MINZ	Indrabati	Indrabati	Indrabati	Indrabati
7	1901219130	JAGANNATH SANTA	Jagannath Santa	Jagannath Santa	Jagannath Santa	Jagannath Santa
8	1901219131	MANSI MAYURI	Mansi Mayuri	Mansi Mayuri	Mansi Mayuri	Mansi Mayuri
9	1901219132	OMPRAKASH ROUT	Omparakash Rout	Omparakash Rout	Omparakash Rout	Omparakash Rout
10	1901219133	PRIVABRATA ROUT	Privabrata Rout	Privabrata Rout	Privabrata Rout	Privabrata Rout
11	1901219134	RAKESH KUMAR JENA	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena	Rakesh Kumar Jena
12	1901219135	ROSHAN KUMAR KAR	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar
13	1901219136	SAHEL SUMAN PATTANAYAK	Sahel Suman Pattanayak	Sahel Suman Pattanayak	Sahel Suman Pattanayak	Sahel Suman Pattanayak
14	1901219137	SANGRAM NAYAK	Sangram Nayak	Sangram Nayak	Sangram Nayak	Sangram Nayak
15	1901219138	SHREERATSA PONDUR	Shreeratsa Pondur	Shreeratsa Pondur	Shreeratsa Pondur	Shreeratsa Pondur
16	1901219139	SISIR KUMAR DALAI	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai	Sisir Kumar Dalai
17	1901219140	SOUBHAGYA KLUND	Soubhagya Klund	Soubhagya Klund	Soubhagya Klund	Soubhagya Klund
18	1901219141	SOURAV RANIAN SAHCO	Sourav Ranian Sahco	Sourav Ranian Sahco	Sourav Ranian Sahco	Sourav Ranian Sahco
19	1901219142	SRIKUMAR BIBEKANANDA DAS	Srikumar Bibekanda Das	Srikumar Bibekanda Das	Srikumar Bibekanda Das	Srikumar Bibekanda Das
20	1901219143	KARAN JENA	Karan Jena	Karan Jena	Karan Jena	Karan Jena
21	1901219144	SUPRAKSHYA SWAIN	Suprakshya Swain	Suprakshya Swain	Suprakshya Swain	Suprakshya Swain
22	1901219254	ABHISHEK DASH	Abhishek Dash	Abhishek Dash	Abhishek Dash	Abhishek Dash
23	1901219255	AYESHA SWAIN	Ayesha Swain	Ayesha Swain	Ayesha Swain	Ayesha Swain
24	1901219256	MILAN RAY	Milan Ray	Milan Ray	Milan Ray	Milan Ray
25	1901219257	PRASIT KUMAR SATAPATHY	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy	Prasit Kumar Satapathy
26	1901219258	PREETISUDHA MOHANTY	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty	Preetisudha Mohanty
27	1901219259	SUBHAN PRADHAN	Subhan Pradhan	Subhan Pradhan	Subhan Pradhan	Subhan Pradhan
28	1901219260	SUBHRANSU RANJAN BISWAL	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal	Subhransu Ranjan Biswal
29	1901219261	SUKRITI PRADHAN	Sukriti Pradhan	Sukriti Pradhan	Sukriti Pradhan	Sukriti Pradhan

Signature of the Course Coordinator

A. Satapathy

A. Satapathy
 PRINCIPAL
 College of Engineering Bhubaneswar



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

ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Programme: B.Tech in Electronics and Telecommunications

Semester: 5th

Academic Year: 2021-22

Name of the Course: ECG signal processing using Raspberry Pi

Course Code (if any):

Duration : **30 hours**

Date & Signature of the Student

SL. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:
1	1901219124	ANAND KANHAR	22/12/2021	23/12/2021	24/12/2021
2	1901219125	APOORBA KUMAR JENA	Anand Kanhar	Anand Kanhar	Anand Kanhar
3	1901219126	BARISA SOREN	Apoorba K. Jena	Apoorba K. Jena	Apoorba K. Jena
4	1901219127	BHUPEN PRABASH SURJULIA	Barisa Soren	Barisa Soren	Barisa Soren
5	1901219128	CHANDAN KUMAR PANIGRAHI	Bhupen P. Surjulia	Bhupen P. Surjulia	Bhupen P. Surjulia
6	1901219129	INDRABATTI MINZ	Chandan K. Panigrahi	Chandan K. Panigrahi	Chandan K. Panigrahi
7	1901219130	JAGANNATH SANTHA	Indrabatti	Indrabatti	Indrabatti
8	1901219131	MANSI MAYURI	Jaganmutha Santa	Jaganmutha Santa	Jaganmutha Santa
9	1901219132	OMPRAKASH ROUT	Mansi Mayuri	Mansi Mayuri	Mansi Mayuri
10	1901219133	PRIYABRATA ROUT	Ompakash Rout	Ompakash Rout	Ompakash Rout
11	1901219134	RAKESH KUMAR JENA	Priyabrata Rout	Priyabrata Rout	Priyabrata Rout
12	1901219135	ROSHAN KUMAR KAR	Rakesh K. Jena	Rakesh K. Jena	Rakesh K. Jena
13	1901219136	SAHEL SUMAN PATTANAYAK	Roshan Kumar Kar	Roshan Kumar Kar	Roshan Kumar Kar
14	1901219137	SANGRAM NAYAK	Sahel Suman Pattanayak	Sahel Suman Pattanayak	Sahel Suman Pattanayak
15	1901219138	SHREEBATS PONDU	Sangram Nayak	Sangram Nayak	Sangram Nayak
16	1901219139	SISR KUMAR DALAI	Shreebats Pondu	Shreebats Pondu	Shreebats Pondu
17	1901219140	SOUBHAGYA KUND	Sisirkumar Dalai	Sisirkumar Dalai	Sisirkumar Dalai
18	1901219141	SOURAV RANJAN SAHOO	Sozablogya Kundu	Sozablogya Kundu	Sozablogya Kundu
19	1901219142	SRIKUMAR BIBEKANANDA DAS	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo	Sourav Ranjan Sahoo
20	1901219143	KARAN JENA	Srikumar Bibekamanda Das	Srikumar Bibekamanda Das	Srikumar Bibekamanda Das
21	1901219144	SURAKSHYA SWAIN	Karan Jena	Karan Jena	Karan Jena
22	1901219254	ABHISHEK DASH	Surakshya Swain	Surakshya Swain	Surakshya Swain
23	1901219255	AYESHA SWAIN	Abhishek Das	Abhishek Das	Abhishek Das
24	1901219256	MILAN RAY	Ayesha Swain	Ayesha Swain	Ayesha Swain



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

Programme: B.Tech in Electronics and Telecommunications
Name of the Course: ECG signal processing using Raspberry Pi
Duration : 30 hours
Semester: 5th
Academic Year: 2021-22
Course Code (if any):

SL. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:
25	1901219257	PRASIT KUMAR SATAPATHY	22/12/2021	23/12/2021	24/12/2021
26	1901219258	PREETISUDHA MOHANTY	Pratikusapati	Prantikusapati	Prantikusapati
27	1901219259	SUBHAM PRADHAN	Pratishudha Mohanty	Pratishudha Mohanty	Pratishudha Mohanty
28	1901219260	SUBHRANSU RANJAN BISWAL	S. Pradhan	S. Pradhan	S. Pradhan
29	1901219261	SUKRITI PRADHAN	Subhraman & Biswal	Subhraman & Biswal	Subhraman & Biswal
Signature of the Course Coordinator			A. Satapathy	A. Satapathy	A. Satapathy

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

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



Certificate of Completion

This is to certify that Mr./Ms. SURAKSHYA SWAIN, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1901219144

has successfully completed the ADD-ON Course titled ECG signal processing using Raspberry Pi

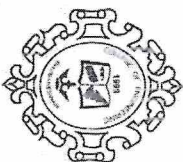
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY


Course-Coordinator


Principal


PRINCIPAL
College of Engineering Bhubaneswar



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



Certificate of Completion

This is to certify that Mr./Ms. ABHISHEK DASH student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1901219254

has successfully completed the ADD-ON Course titled ECG signal processing using Raspberry Pi

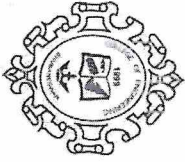
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL
 College of Engineering Bhubaneswar



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



Certificate of Completion

This is to certify that Mr./Ms. AYESHA SWAIN, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1901219255

has successfully completed the ADD-ON Course titled ECC signal processing using Raspberry Pi

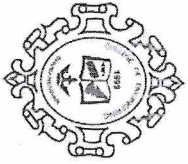
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY

[Signature]
Course-Coordinator

[Signature]
Principal

[Signature]
PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

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



Certificate of Completion

This is to certify that Mr./Ms. MEGHANTHNAIK, student of the Department

of Electronics & Telecommunication Engg. semester Seventh bearing registration number 1801219082

has successfully completed the ADD-ON Course titled Animal sound processing

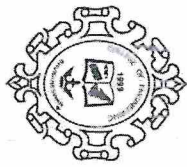
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar



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



Certificate of Completion

This is to certify that Mr./Ms. AMAN KUMAR, student of the Department

of Electronics and Telecommunication semester Third bearing registration number 2101219120

has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits

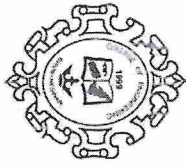
conducted at College of Engineering Bhubaneswar in the academic year 2022-23

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar

TRUE COPY



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



Certificate of Completion

This is to certify that Mr./Ms. KARAN JENA, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1901219143

has successfully completed the ADD-ON Course titled ECCG signal processing using Raspberry Pi

conducted at College of Engineering Bhubaneswar in the academic year 2021-22

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar

TRUE COPY