



**COLLEGE OF ENGINEERING BHUBANESWAR (COEB)**  
Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.  
[AFFILIATED TO BPUT, ODISHA]  
[www.coeb.ac.in](http://www.coeb.ac.in)

**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING**

**ADD-ON COURSE : Animal sound processing**

[Programme: B.Tech, ETC]

**Course Objectives:**

To expose the students the fundamental concepts and history of bioacoustic recording and equipment; To impart knowledge to student about software algorithms for automated detection and classification of animal sounds.

**SYLLABUS**

**Total Lecture Hours : 30**

**MODULE-I:**

[10 Hours]

Introduction, recorders, microphones, advances in sound analysis, basic concepts of sound recording, calibration, other gear., Collecting data, ethical research, playback method and control, digital file format, data storage, studies on captive animals

**MODULE-II**

[10 Hours]

Acoustic signal processing, localization and tracking, sound propagation, source path receiver model, classification and detection of animal sound, Noise effects on terrestrial vertebrates, noise effects on fish, noise effects on reptiles, noise effects on mammals

**MODULE-III**

[10 Hours]

Sound Propagation in Terrestrial Environments , The Source-Path-Receiver Model for Animal Acoustic Communication , The Sonar Equation , The Layered Ocean , Propagation Loss , Practical Acoustic Modeling Examples , Software for Analyses

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

- CO1: Explain the basic principles of bioacoustics.
- CO2: Explain the different statistical method for analyzing bioacoustics data.
- CO3: Able to explain the effects of noise on animals

**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:**

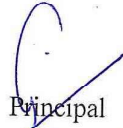
1. Exploring Animal Behavior Through Sound: Volume 1
2. Speech and Audio Signal Processing by Jayan A.R

**Other Sources:**

**e-Learning Resources:**

1. <https://www.elephantvoices.org/>
2. <https://www.youtube.com/watch?v=WJI-17MNpdE>

**Design and Developed by:** Prof. Debarchana Jena and Prof. Subrat Kumar Mohanty

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



**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATIONS ENGINEERING  
COLLEGE OF ENGINEERING BHUBANESWAR**

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**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.

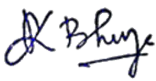
Semester	Course Title	Course Coordinator	Date of Commencement
3rd	Design and Analysis of Oscillator Circuits	Prof. Prasant Sethi	06/12/2021
5th	ECG signal processing using Raspberry Pi	Prof . Asit Kumar Satapathy	06/12/2021
7th	Animal sound processing	Prof. Subrat Kumar Mohanty	06/12/2021

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

  
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Head of the Department



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

ADD-ON COURSE

STUDENT ENROLLMENT SHEET

Student's Declaration/Undertaking

Name of the Department: Electronics and Telecommunication Engineering	
Course Title: Animal sound processing	
Semester: 7th	Academic Year: 2021-22

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	1801219018	ASHISH KUMAR PARIDA	A. K. Parida
2	1801219021	ASIF KHAN	Asif Khan
3	1801219042	DAVID HANSDAH	David Hansdah
4	1801219062	JITU MISTRY	Jitu Mishra
5	1801219065	KALYANI SWAGATIKA DASH	Kalyani Swagatika Das
6	1801219079	MANORANJAN SAHOO	Manoranjan Sahoo
7	1801219082	MEGHANTH NAIK	Meghanth Naik
8	1801219091	NUTAN NAYAK	Nutan Nayak
9	1801219099	PRASANTA KUMAR THAKUR	Prasant Kumar Thakur
10	1801219107	PRIYABRATA KUMURA	Priyabrata Kumura
11	1801219112	PURNENDU SUNANI	Purnendu Sunani
12	1801219130	SANKAT MOCHAN BISWAL	Sankat Mochan Biswal
13	1801219163	SUSHREE SANGITA	Sushree Sangita
14	1801219170	TOKAN BEHERA	Tokan Behera
15	1801219227	ANANYA SAMAL	Anany Samal
16	1801219228	BIJAY KUMAR PADHI	Bijaya ku. Padhi
17	1801219229	BISHNUPRIYA MOHARANA	B. Moharana
18	1801219230	MAHESH PRASAD MISHRA	Mahesh Prasad Mishra
19	1801219231	NISHI TIRKEY	Nishi Tirkey
20	1801219232	SMRUTIREKHA MARANDI	Smrutirekha Marandi
21	1801219233	SUBHASHREE BIDYASAGAR	Subhashree Bidyasagar

  
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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  
 Name of the Course: **Animal sound processing**  
 Semester: 7th  
 Course Code (if any):  
 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	1801219018	ASHISH KUMAR PARIDA	6/12/2021	7/12/2021	8/12/2021	9/12/2021
2	1801219021	ASIF KHAN	A.K. Parida	A.K. Parida	A.K. Parida	A.K. Parida
3	1801219042	DAVID HANSDAH	Asif Khan	Asif Khan	Asif Khan	Asif Khan
4	1801219062	JITU MISTRY	David Hansdah	David Hansdah	David Hansdah	David Hansdah
5	180-219065	KALYANI SWAGATIKA DASH	Jitu Mistry	Jitu Mistry	Jitu Mistry	Jitu Mistry
6	1801219079	MANORANJAN SAHOO	Kalyani Swagatika Dash	Kalyani Swagatika Dash	Kalyani Swagatika Dash	Kalyani Swagatika Dash
7	1801219082	MEGHANTH NAIK	Manojanjan Sahoo	Manojanjan Sahoo	Manojanjan Sahoo	Manojanjan Sahoo
8	1801219091	NIJTAN NAYAK	Meghant Nath Naik	Meghant Nath Naik	Meghant Nath Naik	Meghant Nath Naik
9	1801219099	PRASANTA KUMAR THAKUR	Naitan Nayak	Naitan Nayak	Naitan Nayak	Naitan Nayak
10	1801219107	PRIVABRATA KUMURA	Prasant K. Thakur	Prasant K. Thakur	Prasant K. Thakur	Prasant K. Thakur
11	1801219112	PURNENDU SUNANI	Privabrata Kumura	Privabrata Kumura	Privabrata Kumura	Privabrata Kumura
12	1801219130	SANKAT MOCHAN BISWAL	Purnendu Sunani	Purnendu Sunani	Purnendu Sunani	Purnendu Sunani
13	1801219163	SUSHREE SANGITA	Sankat M. Biswal	Sankat M. Biswal	Sankat M. Biswal	Sankat M. Biswal
14	1801219170	TOKAN BEHERA	Sushree Sangita	Sushree Sangita	Sushree Sangita	Sushree Sangita
15	1801219227	ANANYA SAMAL	Tokan Behera	Tokan Behera	Tokan Behera	Tokan Behera
16	1801219228	BIJAY KUMAR PADHI	Ananya Samal	Ananya Samal	Ananya Samal	Ananya Samal
17	1801219229	BISHNUPRIYA MOHARANA	Bijay Kumar Padhi	Bijay Kumar Padhi	Bijay Kumar Padhi	Bijay Kumar Padhi
18	1801219230	MAHESH PRASAD MISHRA	Bishnupriya Moharana	Bishnupriya Moharana	Bishnupriya Moharana	Bishnupriya Moharana
19	1801219231	NISHI TIRKEY	M.P. Mishra	M.P. Mishra	M.P. Mishra	M.P. Mishra
20	1801219232	SMRUTIREKHA MARANDI	Nishi Tirkey	Nishi Tirkey	Nishi Tirkey	Nishi Tirkey
21	1801219233	SUBHASHREE BIDYASAGAR	Smrutirekha Marandi	Smrutirekha Marandi	Smrutirekha Marandi	Smrutirekha Marandi
Signature of the Course Coordinator			S.K. Mohanty	S.K. Mohanty	S.K. Mohanty	S.K. Mohanty

*S.K. Mohanty*

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**STUDENT ATTENDANCE SHEET**

Sheet No. \_\_\_\_\_

Programme: B.Tech in Electronics and Telecommunications  
 Name of the Course: **Animal sound processing**

Semester: 7th  
 Course Code (if any):

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	1801219018	ASHISH KUMAR PARIDA	10/12/2021	13/12/2021	14/12/2021	15/12/2021
2	1801219021	ASIF KHAN	ASIF KHAN	ASIF KHAN	ASIF KHAN	ASIF KHAN
3	1801219042	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH
4	1801219052	JITU MISTRY	JITU MISTRY	JITU MISTRY	JITU MISTRY	JITU MISTRY
5	1801219065	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH
6	1801219079	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO
7	1801219082	MEGHANATH NAIK	MEGHANATH NAIK	MEGHANATH NAIK	MEGHANATH NAIK	MEGHANATH NAIK
8	1801219091	NIJTAN NAYAK	NIJTAN NAYAK	NIJTAN NAYAK	NIJTAN NAYAK	NIJTAN NAYAK
9	1801219099	PRASANTA KUMAR THAKUR	PRASANTA KUMAR THAKUR	PRASANTA KUMAR THAKUR	PRASANTA KUMAR THAKUR	PRASANTA KUMAR THAKUR
10	1801219107	PRITYABRATA KUMURA	PRITYABRATA KUMURA	PRITYABRATA KUMURA	PRITYABRATA KUMURA	PRITYABRATA KUMURA
11	1801219112	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI
12	1801219130	SANKAT MOCHAN BISWAL	SANKAT MOCHAN BISWAL	SANKAT MOCHAN BISWAL	SANKAT MOCHAN BISWAL	SANKAT MOCHAN BISWAL
13	1801219153	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA
14	1801219170	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA
15	1801219227	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL
16	1801219228	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI
17	1801219229	BISHNUPRIYA MOHARANA	BISHNUPRIYA MOHARANA	BISHNUPRIYA MOHARANA	BISHNUPRIYA MOHARANA	BISHNUPRIYA MOHARANA
18	1801219230	MAHESH PRASAD MISHRA	MAHESH PRASAD MISHRA	MAHESH PRASAD MISHRA	MAHESH PRASAD MISHRA	MAHESH PRASAD MISHRA
19	1801219231	NISHI TIRKEY	NISHI TIRKEY	NISHI TIRKEY	NISHI TIRKEY	NISHI TIRKEY
20	1801219232	SMRUTIREKHA MARANDI	SMRUTIREKHA MARANDI	SMRUTIREKHA MARANDI	SMRUTIREKHA MARANDI	SMRUTIREKHA MARANDI
21	1801219233	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR

Signature of the Course Coordinator: **S.K. Mohanty**

*S.K. Mohanty*

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Sheet No. \_\_\_\_\_

Programme : B.Tech in Electronics and Telecommunications  
 Name of the Course : **Animal sound processing**  
 Duration : **30 hours**

Semester : 7th  
 Course Code (if any):  
 Date & Signature of the Student

Academic Year: 2021-22

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	1801219018	ASHISH KUMAR PARIDA	16/12/2021	17/12/2021	20/12/2021	21/12/2021
2	1801219021	ASIF KHAN	ASIF KHAN	ASIF KHAN	ASIF KHAN	ASIF KHAN
3	1801219042	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH	DAVID HANSDAH
4	1801219052	JITU MISTRY	JITU MISTRY	JITU MISTRY	JITU MISTRY	JITU MISTRY
5	1801219065	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH	KALYANI SWAGATIKA DASH
6	1801219079	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO	MANORANJAN SAHOO
7	1801219082	MEGHANTH NAIK	MEGHANTH NAIK	MEGHANTH NAIK	MEGHANTH NAIK	MEGHANTH NAIK
8	1801219091	NIJAN NAYAK	NIJAN NAYAK	NIJAN NAYAK	NIJAN NAYAK	NIJAN NAYAK
9	1801219099	PRASANTA KUMAR TEAKUR	PRASANTA K. TEAKUR	PRASANTA K. TEAKUR	PRASANTA K. TEAKUR	PRASANTA K. TEAKUR
10	1801219107	PRITYABRATA KUMARA	PRITYABRATA KUMARA	PRITYABRATA KUMARA	PRITYABRATA KUMARA	PRITYABRATA KUMARA
11	1801219112	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI	PURNENDU SUNANI
12	1801219130	SANKAT MOCHAN BISWAL	SANKAT M. BISWAL	SANKAT M. BISWAL	SANKAT M. BISWAL	SANKAT M. BISWAL
13	1801219163	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA	SUSHREE SANGITA
14	1801219170	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA	TOKAN BEHERA
15	1801219227	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL	ANANYA SAMAL
16	1801219228	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI	BIJAY KUMAR PADHI
17	1801219229	BISHNUPRIYA MOHARANA	B. MOHARANA	B. MOHARANA	B. MOHARANA	B. MOHARANA
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21	1801219233	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR	SUBHASHREE BIDYASAGAR
Signature of the Course Coordinator			S.V. Mohanty	S.V. Mohanty	S.V. Mohanty	S.V. Mohanty

*S.V. Mohanty*

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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: 7th

Academic Year: 2021-22

Name of the Course: Animal sound processing

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	1801219018	ASHISH KUMAR PARIDA	A.K. Parida 22/12/2021	A.K. Parida 23/12/2021	A.K. Parida 24/12/2021
2	1801219021	ASIF KHAN	Asif Khan David Hamsdah	Asif Khan David Hamsdah	Asif Khan David Hamsdah
3	1801219042	DAVID HANSDAH	David Hamsdah	David Hamsdah	David Hamsdah
4	1801219062	JITU MISTRY	Jitu Mistry	Jitu Mistry	Jitu Mistry
5	1801219065	KALYANI SWAGATIKA DASH	Kalyani Swagatika Dash	Kalyani Swagatika Das	
6	1801219079	MANORAMJAN SAHOO	Manorajjan Sahoo	Manorajjan Sahoo	Manorajjan Sahoo
7	1801219082	MEGHANTH NAIK	Megharth Naik	Megharth Naik	Megharth Naik
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9	1801219099	PRASANTA KUMAR THAKUR	Prasant K. Thakur	Prasant K. Thakur	Prasant K. Thakur
10	1801219107	PRIYABRATA KUMURA	Priyabrata Kumura	Priyabrata Kumura	Priyabrata Kumura
11	1801219112	PURNENDU SUNANI	P. Sunani	P. Sunani	P. Sunani
12	1801219130	SANKAT MOCHAN BISWAL	Sankat M. Biswal	Sankat M. Biswal	Sankat M. Biswal
13	1801219163	SUSHREE SANGITA	Susree Sangita	Susree Sangita	Susree Sangita
14	1801219170	TOKAN BEHERA	Tokan Behera		Tokan Behera
15	1801219227	ANANYA SAMAL	Ananya Samal	Ananya Samal	Ananya Samal
16	1801219228	BIJAY KUMAR PADHI	Bijaya Ku. Padhi	Bijaya Ku. Padhi	Bijaya Ku. Padhi
17	1801219229	BISHNUPRIYA MOHARANA	B. Moharana	B. Moharana	B. Moharana
18	1801219230	MAHESH PRASAD MISHRA	M.P. Mishra	M.P. Mishra	M.P. Mishra
19	1801219231	NISHI TIRKEY	Nishi	Nishi	Nishi
20	1801219232	SMRUTIREKHA MARANDI	Smrutirekha Marandi	Smrutirekha Marandi	Smrutirekha Marandi
21	1801219233	SUBHASHREE BIDYASAGAR	Subhashree Bidyasagar	Subhashree Bidyasagar	Subhashree Bidyasagar

Signature of the Course Coordinator

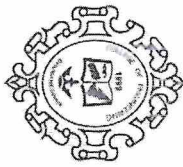
S.V. Mohanty

S.V. Mohanty

S.V. Mohanty

Principal





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

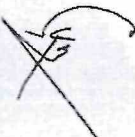


# *Certificate of Completion*

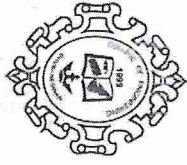
This is to certify that Mr./Ms. PRASANTA KUMAR THAKUR student of the Department  
of Electronics & Telecommunication Engg. semester Seventh bearing registration number 1801219099  
has successfully completed the ADD-ON Course titled Animal sound processing  
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

**TRUE COPY**

  
Course-Coordinator

  
Principal

  
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**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. PRIYABRATA KUMURA, student of the Department

of Electronics & Telecommunication Engg. semester Seventh bearing registration number 1801219107

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

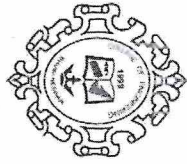
conducted at College of Engineering Bhubaneswar in the academic year 2021-22.

**TRUE COPY**

Course-Coordinator

Principal

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**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. PURNENDU SUNANI, student of the Department

of Electronics & Telecommunication Engg. semester Seventh bearing registration number 1801219112

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

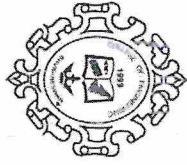
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

**TRUE COPY**

Course-Coordinator

Principal

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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

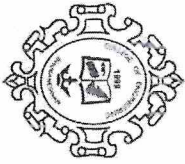
conducted at College of Engineering Bhubaneswar in the academic year 2022-23

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. NUTANNAYAK student of the Department  
of Electronics & Telecommunication Engg. semester Seventh bearing registration number 1801219091  
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