



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 : Advances and challenges in telecommunication

[Programme: B.Tech, ETC]

Course Objectives:

To expose the students the fundamental concepts of Wireless Communication Systems/Networks; To impart knowledge to student about recent trends in telecommunication. It provides a brief introduction on the research area of 4G/5G communication systems.

SYLLABUS

Total Lecture Hours : 40

MODULE-I:

[10 Hours]

Evolution of Broadband Wireless; Fixed Broadband Wireless and Mobile Broadband Wireless; WiMAX, 3G, 4G and beyond. Wi-Fi Systems; Spectrum Options for Broadband Wireless; Technical Challenges for Broadband Wireless - Wireless Radio Channel: Path loss and Shadowing; Spectrum Scarcity, Quality of Service, Mobility, Portability, Security, Supporting IP in Wireless.

MODULE-II

[10 Hours]

Orthogonal Frequency Division Multiplexing, Multicarrier Modulation – OFDM, Introduction to Multiple Antenna Techniques, SISO, SIMO, MISO and MIMO antenna schemes.

MODULE-III

[10 Hours]

Recent Trends in Tele-communication, Artificial intelligence and its uses in communication. Introduction to ML, DL and their uses in communication.

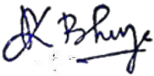
MODULE-IV

[10 Hours]

Limitations and future prospects of ML, DL, AI based communication. Technical perspective of these algorithms in communication

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

- CO1: Explain the basic principles of Wireless communication.
- CO2: Explain the different algorithms involved in communication
- CO3: Able to explain the challenges in communication and future prospect.


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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:

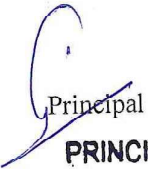
1. Wireless Communication: Advancements and Challenges (Wireless Communications and Networking Technologies) by Krishna Kumar, Pankaj Sharma, Ram Shringar Rao.
2. Advances in Telecommunications Networks by William M. Lee Derrick C. Brown.
3. Advanced Communication System by Sapna Katiyar , S.K. Kataria & Sons

Other Sources:

e-Learning Resources:

1. <https://www.youtube.com/watch?v=-ymnQ5rpcYA&list=PLbMVogVj5nJSi8FUsvglRxLtN1TN9y4nx>

Design and Developed by: Prof. Snehasis Dey and Prof. Lokanath Sarangi


Principal
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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

Date: 05/08/2019

Ref No: COEB/ETC/2019/09

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 **06/08/2019**. 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	PCB Design	Prof. Arpit Sourav Mohapatra	16/08/2019
5th	Advances and challenges in telecommunication	Prof . Loknath Sarangi	16/08/2019
7th	Machine Learning Algorithms for Communication	Prof. Sandip Kumar Mishra	16/08/2019

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


Head of the Department
W.S.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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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

ADD-ON COURSE

STUDENT ENROLLMENT SHEET

Name of the Department: Electronics and Telecommunication Engineering	
Course Title: Advances and challenges in telecommunication	
Semester: 5 th	Academic Year: 2019-20

Student's Declaration/Undertaking

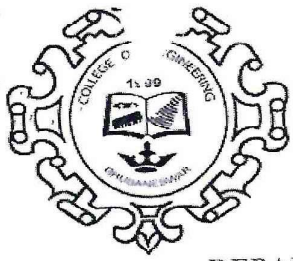
1. I do hereby undertake to participate in the above mentioned add on course.

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	1701219010	CHANDAN GOUDA	Chandan Gouda
2	1701219018	BHAGYASHREE SAMANTARAY	Bhagyashree Samantaray
3	1701219034	BOSEN BIRUA	Bosen Birua
4	1701219036	BISHAL JHARIAT	Bishal Jhariat
5	1701219037	ABHIRAM DHAR	Abhiram Dhar
6	1701219056	ASHIS KUMAR SHAW	Ashis K. Shaw
7	1701219062	ABHISEK KANUNGO	Abhishek Kanungo
8	1701219069	ABHISEK MISHRA	Abhishek Mishra
9	1701219076	RANJIT MOHANTY	Ranjit Mohanty
10	1701219089	SONALI RAJAK	Sonali Rajak
11	1701219090	DAYASAGAR MANGAL	Dayasagar Mangal
12	1701219132	SOUMYA RANJAN MISHRA	Somyaranjan Mishra
13	1701219133	ABHISEK KUMAR GUPTA	Abhishek K. Gupta
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16	1701219136	BIRENDRA KUMAR	Birendra Kumar
17	1701219137	DIBYADARSHINI MAHARATHA	Dibyadarshini Maharatha
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19	1701219139	RAJESH SWAIN	Rajesh Swain
20	1701219140	RATI	Rati
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25	1701219145	MEGHA	Megha
26	1701219177	JHADESWAR BADHAI	Jhadeswar Bahai
27	1701219284	BAPU PRADHAN	Bapu Pradhan
28	1701219285	LOPAMUDRA PANI	Lopamudra Pani
29	1701219286	MIKINA JENA	Mikina Jena
30	1701219287	DURGA MOHANTY NIVEDITA	Durga Mohanty
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ADD ON COURSE _____

STUDENT ATTENDANCE SHEET

Programme: B.Tech in ETC

Semester: 5th Academic Year :2019-20

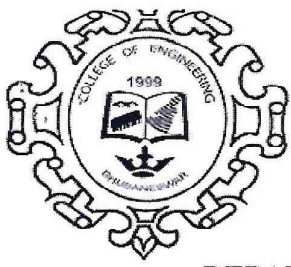
Name of the course: Advances and challenges in telecommunication

Course Code (if any):

Duration : 40 hours			Date & Signature of the Student			
SL. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date: 16/8/19	Date: 19/8/19	Date: 20/8/19	Date: 21/8/19
1	1701219010	CHANDAN GOUDA	Chandan Gouda	Chandan Gouda	Chandan Gouda	Chandan Gouda
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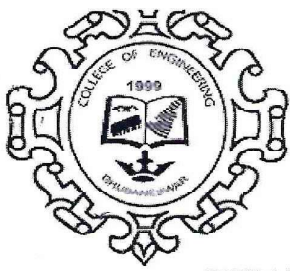
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Signature of the Course Coordinator			L. Sarangi	L. Sarangi	L. Sarangi	L. Sarangi


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Semester: 5th Academic Year :2019-20

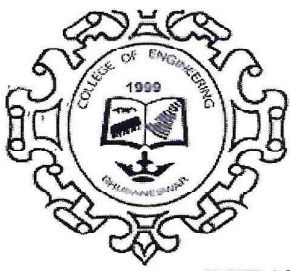
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1	1701219010	CHANDAN GOUDA	Chandan Gouda	Chandan Gouda	Chandan Gouda	Chandan Gouda
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(Signature)

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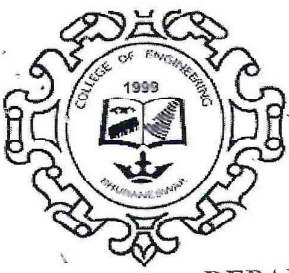
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Signature of the Course Coordinator			L. Sarangi	L. Sarangi	L. Sarangi	L. Sarangi

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STUDENT ATTENDANCE SHEET

Programme: B.Tech in ETC

Semester: 5th Academic Year :2019-20

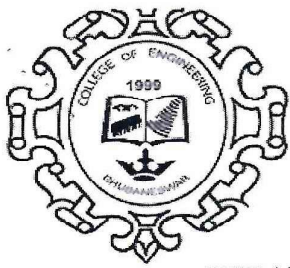
Name of the course: Advances and challenges in telecommunication

Course Code (if any):

Duration : 40 hours			Date & Signature of the Student			
.. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date: 29/8/19	Date: 30/8/19	Date: 4/10/19	Date: 5/10/19
1	1701219010	CHANDAN GOUDA	Chandan Gouda	Chandan Gouda	Chandan Gouda	Chandan Gouda
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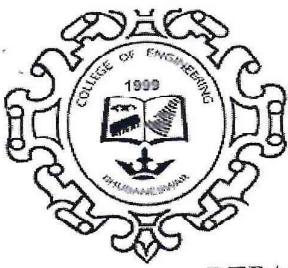
Semester: 5th Academic Year :2019-20

Name of the course: Advances and challenges in telecommunication

Course Code (if any):

Duration : 40 hours			Date & Signature of the Student			
.. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date: 6/10/19	Date: 10/10/19	Date: 11/10/19	Date: 12/10/19
1	1701219010	CHANDAN GOUDA	Chandan Gouda	Chandan Gouda	Chandan Gouda	Chandan Gouda
2	1701219018	BHAGYASHREE SAMANTARAY	Bhagya Shree	Bhagya Shree	Bhagya Shree	
3	1701219034	BOSEN BIRUA	Bosen Birua	Bosen Birua	Bosen Birua	Bosen Birua
4	1701219036	BISHAL JHARIAT	Bishal	Bishal	Bishal	Bishal
5	1701219037	ABHIRAM DHAR	Abhiram Dhar	Abhiram Dhar	Abhiram Dhar	Abhiram Dhar
6	1701219056	ASHIS KUMAR SHAW	Ashish Kumar Shaw	Ashish Kumar Shaw	Ashish Kumar Shaw	Ashish Kumar Shaw
7	1701219062	ABHISEK KANUNGO	Abhishek Kanungo	Abhishek Kanungo	Abhishek Kanungo	Abhishek Kanungo
8	1701219069	ABHISHEK MISHRA	Abhishek Mishra	Abhishek Mishra	Abhishek Mishra	Abhishek Mishra
9	1701219076	RANJIT MOHANTY	Ranjit Mohanty	Ranjit Mohanty	Ranjit Mohanty	Ranjit Mohanty
10	1701219089	SONALI RAJAK	Sonali Rajak	Sonali Rajak	Sonali Rajak	Sonali Rajak
11	1701219090	DAYASAGAR MANGAL	Dayasagar Mangal	Dayasagar Mangal	Dayasagar Mangal	Dayasagar Mangal
12	1701219132	SOUMYA RANJAN MISHRA	Soumya Ranjan Mishra	Soumya Ranjan Mishra	Soumya Ranjan Mishra	
13	1701219133	ABHISHEK KUMAR GUPTA	Abhishek K. Gupta	Abhishek K. Gupta	Abhishek K. Gupta	Abhishek K. Gupta
14	1701219134	AKASHDIP NAYAK	Aakash Dip Nayak	Aakash Dip Nayak	Aakash Dip Nayak	Aakash Dip Nayak
15	1701219135	ANKITA DAS	Ankita Das	Ankita Das	Ankita Das	Ankita Das
16	1701219136	BIRENDRA KUMAR	Birendra Kumar	Birendra Kumar	Birendra Kumar	Birendra Kumar
17	1701219137	DIBYADARSHINI MAHARATHA	Dibyadarshini Maharatha	Dibyadarshini Maharatha	Dibyadarshini Maharatha	Dibyadarshini Maharatha
18	1701219138	MANISH KUMAR	Manish Kumar	Manish Kumar	Manish Kumar	
19	1701219139	RAJESH SWAIN	Rajesh Swain	Rajesh Swain	Rajesh Swain	Rajesh Swain
20	1701219140	RATI	Rati	Rati	Rati	Rati


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Patia, Bhubaneswar-751024, Odisha, India.

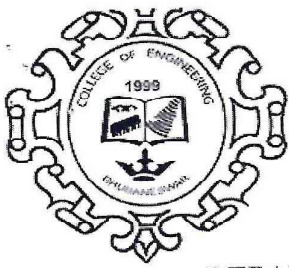
[AFFILIATED TO BPUT, ODISHA]

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ADD ON COURSE _____

STUDENT ATTENDANCE SHEET

21	1701219141	SHIWANI JHA		Shiwani Tha	Shiwani Tha	Shiwani Tha	Shiwani Tha
22	1701219142	SOURAV CHOUDHARY	Sourav Choudhary	Sourav Choudhary	Sourav Choudhary	Sourav Choudhary	Sourav Choudhary
23	1701219143	SOURAV KUMAR MANDAL	Seenav Kumar mandal	Seenav Kumar mandal	Seenav Kumar mandal	Seenav Kumar mandal	Seenav Kumar mandal
24	1701219144	TARAPRASAD SAHOO	Taraprasad Saha	Taraprasad Saha	Taraprasad Saha	Taraprasad Saha	Taraprasad Saha
25	1701219145	MEGHA	Megha	Megha	Megha	Megha	Megha
26	1701219177	JHADESWAR BADHAI	J. Badhai	J. Badhai	J. Badhai	J. Badhai	J. Badhai
27	1701219284	BAPU PRADHAN	Bapu Pradhan	Bapu Pradhan	Bapu Pradhan	Bapu Pradhan	Bapu Pradhan
28	1701219285	LOPAMUDRA PANI	Lopamudra Pani	Lopamudra Pani	Lopamudra Pani	Lopamudra Pani	Lopamudra Pani
29	1701219286	MIKINA JENA	Mikina Jena	Mikina Jena	Mikina Jena	Mikina Jena	Mikina Jena
30	1701219287	DURGA MOHANTY NIVEDITA	Durga Mohanty	Durga Mohanty	Durga Mohanty	Durga Mohanty	Durga Mohanty
31	1701219288	GAZALA PARWEEN	Gazala Parween				Gazala Parween
Signature of the Course Coordinator				L. Sarangi	L. Sarangi	L. Sarangi	L. Sarangi


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 Patia, Bhubaneswar-751024, Odisha, India.

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON COURSE _____

STUDENT ATTENDANCE SHEET

Programme: B.Tech in ETC

Semester: 5th Academic Year :2019-20

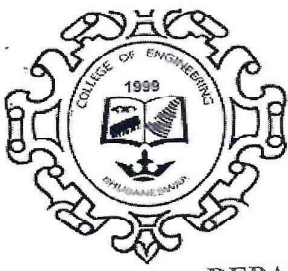
Name of the course: Advances and challenges in telecommunication

Course Code (if any):

Duration : 40 hours			Date & Signature of the Student			
Sl. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date: 13/10/19	Date: 16/10/19	Date: 17/10/19	Date: 18/10/19
1	1701219010	CHANDAN GOUDA	Chandan Gouda	Chandan Gouda	Chandan Gouda	Chandan Gouda
2	1701219018	BHAGYASHREE SAMANTARAY	Bhagya Shree	Bhagya Shree	Bhagya Shree	Bhagya Shree
3	1701219034	BOSEN BIRUA	Bosm Birua	Bosm Birua	Bosm Birua	Bosm Birua
4	1701219036	BISHAL JHARIAT	Bishal	Bishal	Bishal	Bishal
5	1701219037	ABHIRAM DHAR	Abhiram Dhar	Abhiram Dhar	Abhiram Dhar	Abhiram Dhar
6	1701219056	ASHIS KUMAR SHAW	Ashish Kumar	Ashish Kumar	Ashish Kumar	Ashish Kumar
7	1701219062	ABHISEK KANUNGO	Abhishek Kanungo	Abhishek Kanungo	Abhishek Kanungo	Abhishek Kanungo
8	1701219069	ABHISHEK MISHRA	Abhishek Mishra	Abhishek Mishra	Abhishek Mishra	Abhishek Mishra
9	1701219076	RANJIT MOHANTY	Ranjit Mohanty	Ranjit Mohanty	Ranjit Mohanty	Ranjit Mohanty
10	1701219089	SONALI RAJAK	Sonali	Sonali	Sonali	Sonali
11	1701219090	DAYASAGAR MANGAL	Dayasagar Mangal	Dayasagar Mangal	Dayasagar Mangal	Dayasagar Mangal
12	1701219132	SOUMYA RANJAN MISHRA	Soumya Ranjan Mishra	Soumya Ranjan Mishra		
13	1701219133	ABHISHEK KUMAR GUPTA	Abhishek K. Gupta	Abhishek K. Gupta	Abhishek K. Gupta	Abhishek K. Gupta
14	1701219134	AKASHDIP NAYAK	Akashdip	Akashdip	Akashdip	Akashdip
15	1701219135	ANKITA DAS	Ankita Das	Ankita Das	Ankita Das	Ankita Das
16	1701219136	BIRENDRA KUMAR	Birendra Kumar	Birendra Kumar	Birendra Kumar	Birendra Kumar
17	1701219137	DIBYADARSHINI MAHARATHA	Dibyadarshini Maharatha	Dibyadarshini Maharatha	Dibyadarshini Maharatha	Dibyadarshini Maharatha
18	1701219138	MANISH KUMAR	Manish Kumar			Manish Kumar
19	1701219139	RAJESH SWAIN	Rajesh Swain	Rajesh Swain	Rajesh Swain	Rajesh Swain
20	1701219140	RATI	Rati	Rati	Rati	Rati

(Signature)

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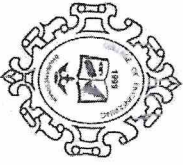
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD ON COURSE _____

STUDENT ATTENDANCE SHEET

21	1701219141	SHIWANI JHA	Shiwani Jha	Shiwani Jha	Shiwani Jha	Shiwani Jha
22	1701219142	SOURAV CHOUDHARY	Sourav Choudhary	Sourav Choudhary	Sourav Choudhary	Sourav Choudhary
23	1701219143	SOURAV KUMAR MANDAL	Sourav Kumar Mandal	Sourav Kumar Mandal	Sourav Kumar Mandal	Sourav Kumar Mandal
24	1701219144	TARAPRASAD SAHOO	Taraprasad Sahoo	Taraprasad Sahoo	Taraprasad Sahoo	Taraprasad Sahoo
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31	1701219288	GAZALA PARWEEN	Gazala Parween	Gazala Parween	Gazala Parween	Gazala Parween
Signature of the Course Coordinator			L. Sarangi	L. Sarangi	L. Sarangi	L. Sarangi

A. Prusty
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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. BIRENDRA KUMAR, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1701219136

has successfully completed the ADD-ON Course titled Advances and challenges in telecommunication

conducted at College of Engineering Bhubaneswar in the academic year 2019-20

TRUE COPY

Course-Coordinator

Principal

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Certificate of Completion

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

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1701219137

has successfully completed the ADD-ON Course titled Advances and challenges in telecommunication

conducted at College of Engineering Bhubaneswar in the academic year 2019-20

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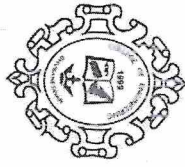
[Signature]

Course-Coordinator

[Signature]

Principal

[Signature]
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This is to certify that Mr./Ms. RAJESH SWAIN, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1701219139

has successfully completed the ADD-ON Course titled Advances and challenges in telecommunication

conducted at College of Engineering Bhubaneswar in the academic year 2019-20

[Signature]

Course-Coordinator

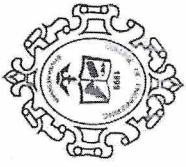
[Signature]

Principal

[Signature]

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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. RATI, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1701219140

has successfully completed the ADD-ON Course titled Advances and challenges in telecommunication

conducted at College of Engineering Bhubaneswar in the academic year 2019-20

[Signature]

Course-Coordinator

[Signature]

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. SOURAV CHOUDHARY, student of the Department

of Electronics & Telecommunication Engg. semester Fifth bearing registration number 1701219142

has successfully completed the ADD-ON Course titled Advances and challenges in telecommunication

conducted at College of Engineering Bhubaneswar in the academic year 2019-20

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Course-Coordinator

Principal

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