

# CERTIFICATE COURSE

Fundamentals of Wireless and Mobile Communication

Starting On - 23-10-2020

Department of Bachelor of Science in Electronics

No registration fee for students from MES College Erumely



**MES COLLEGE ERUMELY**

*(Approved by Govt. of Kerala & Affiliated to Mahatma Gandhi University)*

**A Minority Institution Certified by National Minority Education Commission**

**Directorate of Human Resource Development Council (HRDC)**

**Director : Rejoola O.M. - 8289 882 175**

# FUNDAMENTALS OF WIRELESS AND MOBILE COMMUNICATION

## MES COLLEGE ERUMELY DEPARTMENT OF ELECTRONICS SYLLABUS OF ADD-ON COURSE (34 Hours)

<b>Module I</b> <b>Introduction to Wireless communication</b>	<b>(5 Hours)</b>
Evolution of Mobile Radio Communication, Mobile Radio System around the world, Examples of Wireless Communication System, Paging System, Cordless Telephone system, Cellular Telephone System, How a cellular telephone one call made.	
<b>Module II</b> <b>Modern Wireless Communication System</b>	<b>(8 Hours)</b>
2G cellular network, 2.5 G Wireless networks, TDMA, HSCSD for GSM, GPRS for GSM and IS-136, EDGE for GSM and IS-136, 3G Wireless networks, CDMA (UMTS), cdma2000, TD SCDMA, Wireless Local Loop (WLL), Wireless Local Area Networks (WLANs), Bluetooth and Personal Area Networks (PANs), Introduction to 4G,	
<b>Module III</b> <b>The Cellular Concept</b>	<b>(8 Hours)</b>
Introduction, Frequency reuse, Channel assignment strategies, Handoff strategies, Prioritising handoffs and Practical handoffs, Interference and system capacity, Co-channel interference, Channel planning, Adjacent channel interference, Power Control for reducing interference, Improving Coverage and Capacity in cellular system, Cell splitting, Sectoring, Repeaters, Microcell zone concept.	
<b>Module IV</b> <b>Multiple Access Techniques for Wireless</b>	<b>(8 Hours)</b>
Introduction to Multiple Access, Frequency Division Multiple Access, Time Division Multiple Access, Spread Spectrum Multiple Access, Frequency Hopping Multiple Access, Code Division Multiple Access, Space Division Multiple Access, Packet Radio and Protocols, Pure ALOHA, Slotted Aloha, Carrier Sense Multiple Access.	
<b>Module V</b> <b>Emerging Technologies and GSM</b>	<b>(5 Hours)</b>
Bluetooth, RFID, Wireless Broadband, Mobile IP, Introduction to GSM, GSM architecture, Call routing, Frequency allocation, Introduction to GPRS, GPRS Architecture.	

### Reference Books

- Wireless Communication Principles and Practice by Theodore S. Rappaport
- Mobile Computing by Asoke K. Talukder

## About the Course

To expose the students to understand mobile radio communication principles and to study the recent trends adopted in cellular systems and wireless standards ,to introduce the concepts ad techniques associated with wireless cellular communication system and to keep updated on latest wireless technologies and trends in the communication field.

Who can apply : **Students Studying in BSc Electronics Programme**

The programme registration will be open from October – 15<sup>th</sup>  
Classes Strated From -23-10-2020

Certificate will be issued on successful completion of the course

**Total Hours : 30**

From

The Head Of The Department  
Department of Electronics  
MES College Erumely

To

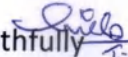
The Principal  
MES College Erumely

Sub: request for seeking approval of certificate course

Sir,

We are planning to conduct a certificate course on 'Fundamentals of wireless communication'. I request you to give the sanction to start the course. The syllabus of the course and the list of the students enrolled are attached with this letter.

Thanking You

Yours faithfully   
Jisha C.K

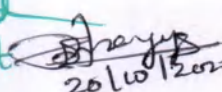
Jisha C.K

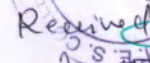
Head of the department

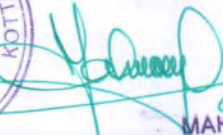
Erumely

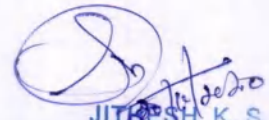
20/10/2020

Forwarded to Principal for Approval

Approved the Certificate Course Submitted  
By Director of APE and HOD Department  
of Electronics  
  
20/10/2020

Original Received  


  
20/10/2020  
MAHEEN M. N.  
PRINCIPAL  
M.E.S. COLLEGE ERUMELY

  
20/10/2020  
JITESH K. S.  
VICE PRINCIPAL  
TRAINING & ACADEMIC

# MES COLLEGE ERUMELY

## HUMAN RESOURCE DEVELOPMENT CENTRE

1. Name of the certificate course : Fundamentals of wireless and mobile communication
2. Offered Department : Electronics
3. Duration of the course : 34hrs
4. Commencement of course : 23/10/2020
5. Proposed date for completion of the course : 30/1/2020
6. No. of students Applied : 28
7. No. of students enrolled : 28
8. Mode of evaluation : Periodic evaluation, test papers and final exam
9. Course Materials : PPT&PDF
10. Syllabus of course(enclosed) : yes
11. Objectives of the course(enclosed) : yes
12. Details of Faculties : Sumaya P.A, Jais John, Anandu M Shaji
13. Certification Authority : MES college Erumely
14. Details of Board of studies :
15. Recommendation from board of studies :
16. Date of approval from board of studies :
17. Course approved by
  - HOD
  - External Expert
  - Director HRDC
  - Vice Principal Academic & Training
  - Principal

*Sumaya P.A*  
21/10/2020  
: Dr. Marykeetty James *Tara*  
Sumaya P.A *Sumaya*  
21/10/2020

*Jithesh K.S.*  
20/10/20  
JITHESH K. S.  
VICE PRINCIPAL  
TRAINING & ACADEMIC -1

*Maheen*  
MAHEEN MOHAMMED  
PRINCIPAL  
M.E.S. COLLEGE ERUMELY



## **Department of Electronics**

### **Certificate Course**

#### **Fundamentals of Wireless and Mobile Communication**

##### **Objectives:**

- To expose the students to understand mobile radio communication principles and to study the recent trends adopted in cellular systems and wireless standards
- To introduce the concepts and techniques associated with wireless cellular communication systems
- To keep updated on latest wireless technologies and trends in the communication field

**MES COLLEGE ERUMELY**  
**DEPARTMENT OF ELECTRONICS**  
**SYLLABUS OF ADD-ON COURSE**

**FUNDAMENTALS OF WIRELESS AND MOBILE COMMUNICATION**  
(34 Hours)

**Module I**

**Introduction to Wireless communication (5 Hours)**

1. Evolution of Mobile Radio Communication
2. Mobile Radio System around the world
3. Examples of Wireless Communication System
  - Paging System
  - Cordless Telephone system
  - Cellular Telephone System
4. How a cellular telephone one call made.

**Module II**

**Modern Wireless Communication System (8 Hours)**

1. 2G cellular network
2. 2.5 G Wireless networks
  - TDMA
  - HSCSD for GSM
  - GPRS for GSM and IS-136
  - EDGE for GSM and IS-136
3. 3G Wireless networks
  - CDMA (UMTS)
  - cdma2000
  - TD SCDMA
4. Wireless Local Loop (WLL)
5. Wireless Local Area Networks (WLANs)
6. Bluetooth and Personal Area Networks (PANs)
7. Introduction to 4G

**Module III**

**The Cellular Concept (8 Hours)**

1. Introduction
2. Frequency reuse



3. Channel assignment strategies
4. Handoff strategies
  - Prioritising handoffs and Practical handoffs
5. Interference and system capacity
  - Co-channel interference
  - Channel planning
  - Adjacent channel interference
  - Power Control for reducing interference.
6. Improving Coverage and Capacity in cellular system
  - Cell splitting
  - Sectoring
  - Repeaters
  - Microcell zone concept

#### **Module IV**

##### **Multiple Access Techniques for Wireless (8 Hours)**

1. Introduction to Multiple Access
2. Frequency Division Multiple Access
3. Time Division Multiple Access
4. Spread Spectrum Multiple Access
  - Frequency Hopping Multiple Access
  - Code Division Multiple Access
5. Space Division Multiple Access
6. Packet Radio and Protocols
  - Pure ALOHA
  - Slotted Aloha
7. Carrier Sense Multiple Access

#### **Module V**

##### **Emerging Technologies and GSM (5 Hours)**

1. Bluetooth
2. RFID
3. Wireless Broadband
4. Mobile IP
5. Introduction to GSM
6. GSM architecture
7. Call routing
8. Frequency allocation
9. Introduction to GPRS
10. GPRS Architecture



Reference Books

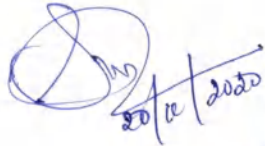
1. Wireless Communication Principles and Practice by Theodore S.Rappaaport

2. Mobile Computing by Asoke K. Talukder

Dr. Marycully James  
Assistant professor  
Department of physics  
St. Thomas college, Kanni

Task 6



  
20/12/2020

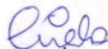
JITHESH K. S.  
VICE PRINCIPAL  
TRAINING & ACADEMIC -1

MES COLLEGE ERUMELY

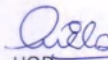
DEPARTMENT OF ELECTRONICS

LIST OF 2<sup>ND</sup> YEAR STUDENTS ENROLLED IN THE CERTIFICATE COURSE

Sl No.	Student Name
1	Kiran Joseph
2	Aiswarya K Das
3	Mebin Thomas
4	Arya raj
5	Fazil K.Y
6	Ashiq Navas
7	Anisha P
8	Alan Thomas
9	Abhijith V
10	Nikhil T Prasad
11	Sino John Philip
12	Muhammed Swadiq
13	Nagarajan V
14	Sreedev A
15	Jobin Sebastian
16	Antochen Binoy

  
Class teacher



  
HOD

**M E S COLLEGE ERUMELY**

**Human Resource Development Centre - HRDC**

**Certification Course**

**DEPARTMENT OF ELECTRONICS**

**Course Offered:-FUNDAMENTALS OF WIRELESS AND MOBILE COMMUNICATION**

**Required time - 34 Hours.**

**S5 B. Sc Electronics**

Roll No	Register No.	Name of the Student
1	180021032575	Abhigith V. Prasad
2	180021032576	Akshay Vijayan
3	180021032577	Anandhu S.
4	180021032578	Aromal Anil
5	180021032579	Ashik Anil
6	180021032580	Harikrishnan U.
7	180021032581	Joji Varughese
8	180021032582	Joyal P. Joy
9	180021032583	Lijo Mathew
10	180021032584	Pranav Anil
11	180021032586	Sreejith N. G.
12	180021032587	Vineesh K. Devan

*Jisha C.K.*  
JISHA C.K

# MES College Erumely

## Department of Electronics Certificate Course Attendance

### VI semester B. Sc Electronics

Roll No	Register No.	Name of the Student	Attendance (30) Hours	Percentage
1	180021032575	Abhigith V. Prasad	28	93
2	180021032576	Akshay Vijayan	20	67
3	180021032577	Anandhu S.	22	73
4	180021032578	Aromal Anil	26	87
5	180021032579	Ashik Anil	8	27
6	180021032580	Harikrishnan U.	28	93
7	180021032581	Joji Varughese	27	90
8	180021032582	Joyal P. Joy	23	77
9	180021032583	Lijo Mathew	21	70
10	180021032584	Pranav Anil	19	63
11	180021032586	Sreejith N. G.	7	23
12	180021032587	Vineesh K. Devan	23	77

### IV semester B. Sc Electronics

1	190021032793	ABHIJITH V.	30	100
2	190021032794	AISWARIA K. DAS	30	100
3	190021032795	ALAN THOMAS	23	77
4	190021032796	ANISHA P.	24	80
5	190021032797	ANTOCHEN BINOY	18	60
6	190021032798	ARYA RAJ	29	97
7	190021032799	ASHIQ NAVAS	19	63
8	190021032800	FAZIL K. Y.	17	57
9	190021032801	JOBIN SEBASTIAN	22	73
10	190021032802	KIRAN JOSEPH	23	77
11	190021032803	MEBIN THOMAS	23	77
12	190021032804	MUHAMMAD SWADIQ	18	60
13	190021032805	NAGARAJAN V.	10	33
14	190021032806	NIKHIL T. PRASAD	23	77
15	190021032807	SINO JOHN PHILIP	24	80
16	190021032808	SREE DEV A.	16	53

*[Signature]*  
25/8/2021

HRDC Director

*[Signature]*  
MAHEEN M.  
PRINCIPAL  
M.E.S. COLLEGE ERUMELY

Jisha C.K  
HOD

for HOD

*[Signature]*  
18 Aug 2021  
Jais John



**MES COLLEGE ERUMELY**  
Certificate Course Examination August 2021  
DEPARTMENT OF ELECTRONICS  
Wireless & Mobile Communication

Sl. No	Reg. No	Name	Score
1	190021023805	NAGARAJAN V	19 / 100
2	190021032807	Sino	53 / 100
3	190021032802	Kiran Joseph	48 / 100
4	190021032808	Sreedev. A	41 / 100
5	190021032804	Muhammad swadiq	35 / 100
6	180021032584	Pranav anil	34 / 100
7	180021032582	Joyal P Roy	71 / 100
8	180021032581	Joji varughese	71 / 100
9	190021032798	ARYA RAJ	71 / 100
10	190021032806	NIKHIL T PRASAD	51 / 100
11	7	AshiqNavas	53 / 100
12	180021032587	Vineesh k devan	64 / 100
13	180021032576	Akshay vijayan	45 / 100
14	190021032793	ABHIJITH V	76 / 100
15	180021032580	Hari Krishnan U	56 / 100
16	4	Anisha. P	49 / 100
17	190021032803	Mebin Thomas	80 / 100

Rejoola O.M  
Director HRDC

Principal  
MAHEEN  
PRINCIPAL  
M.E.S. COLLEGE ERUMELY



# Completion report of certificate course during the Academic year 2020-2021

## Department of Electronics

This is to certify that as per the HRDC director board approval, we conducted a certificate course on Wireless and Mobile communication.

Classes handled by the faculties: Jais John and Swathi Mohan.

Hours taken to complete the course : 30 Hours

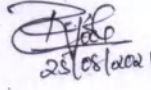
Total students registered for the course: 28

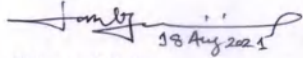
The number of students having above 75% is 15

The number of students having below 75% is 13

Date of commencement of the course: 30/10/2020

Date of completion of the course: 31/05/2021

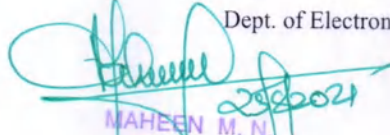
  
25/05/2021  
HRDC Director

  
19 Aug 2021 for HoD

Jishamol C. K.

HoD

Dept. of Electronics

  
29/05/2021  
MAHEEN M. N.  
PRINCIPAL  
M.E.S. COLLEGE ERUMELY



MES/EC/HRDC/880



# MES COLLEGE ERUMELY


(Approved by Govt. of Kerala & Affiliated to Mahatma Gandhi University)  
A Minority Institution Certified by National Minority Education Commission

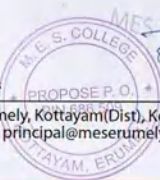
No:

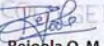
Date: 02/09/2021

## CERTIFICATE OF MERIT

This is to certify that Sri/Kumari MESIN THOMAS  
has successfully completed the 30 hours Certificate Course entitled "**Fundamentals of Wireless Communication**"  
Conducted by **Department of Electronics** and Directorate of Human Resource Development Council (HRDC),  
MES College Erumely.

  
Jishamol C.K.  
HOD Department of Electronics



  
Rejoila O. M.  
Director HRDC

  
Maheen M. N.  
Principal

MES College PO, Erumely, Kottayam(Dist), Kerala - 686509 Ph: 04828 254393, 255444, Fax: 04828 255464  
Email principal@meserumelycollege.ac.in, www.meserumelycollege.ac.in