

# **WIRELESS LOCAL LOOP & GSM TECHNOLOGIES Training Program**



In a world of increasing mobility, there is a growing need for people to communicate with each other and have timely access to information regardless of the location of the individuals or the information. The demand for wireless communication systems of increasing sophistication and ubiquity has led to the need for a better understanding of fundamental issues in communication theory and electromagnetics and their implications for the design of highly-capable wireless systems.

**This Program is ideally suited to following individuals who are:**

- Fresh University Graduates and like to get the knowledge of WLL and Cellular Communication.
- Working in Cellular, Circuit and Packet Switching Companies.
- Who want to be good and reputable jobs in the market and are like to enhance their skills in the same Sector.

**Program is offered by: 3D Educators – Trainers & Consultants**

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# 3D EDUCATORS

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## TRAINERS & CONSULTANTS

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### HEAD OFFICE

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### CAMPUS II

Suite # 305 Business Center Main Shahrah-e-Faisal, Adjacent PSO Pump Nursery Karachi – 0322-2083032

# Program Details

## Inauguration

The Training Program will be inaugurated by a senior member of 3DEducators

## Program Structure

Number of classes in a week	Two Class Per Week
Duration of each class	4-Hour
Total Duration	72-Hours
Practical	ON SITE
Admission Fee:	Rs.1000/- Only
Tuition Fee:	Rs.5000 Per Month
<b>Total Fee:</b>	<b>Rs.10000/-</b>

## Other Learning Activities:

Classroom Assignments	2
Presentations by Trainees	1

## About the Program Designer & Instructor

The “Certified WLL & GSM Technologies” Program has been designed and will be conducted by PhD researchers and having the vast experience of training and consulting. They have worked with various large Government, National, and Multinational organizations in local and abroad.

The Trainers who are conducting this program are have on the position of the following:

- ✓ Senior Manager in Telecommunication Industry

They trainers are foreign qualified and having the degree of Masters from accredited university, and having the vast experience in the WLL and GSM Technologies.

As Consultant & Senior Trainers the team of trainers having the vast experience from econometrics side! We **3D Educators – Trainers & Consultants** would not compromise on the faculty.

## Program Syllabus

### COURSE OUTLINE FOR WIRELESS COMMUNICATION WILLAND GSM TECHNIQUE

#### **PART – 1**

#### **CHAPTER NO: - 1**

#### **INTRODUCTION OF WIRELESS COMMUNICATION**

1. Evaluation of mobile communication.
2. Wireless comes of Age.
3. The cellular revolution.
4. The global cellular network.
5. How a cellular call is made
6. Broad – band.

#### **Chapter No: - 2**

#### **TRANSMISSION FUNDAMENTALS**

1. Time Domain Concept.
2. Frequency Domain concept.
3. Relationship between Data rate and Bandwidth.
4. Analog and Digital data.
5. Analog and Digital Signaling.
6. Analog and Digital Transmission.
7. Terrestrial and Satellite Microwave.
8. Broadcast Radio.
9. Multiplexing Techniques.
10. Modulation and Demodulation Techniques.

#### **Chapter No: - 3**

#### **MODERN WIRELESS COMMUNICATION SYSTEM**

1. Basic concept of AMPS ( Advance Mobile Phone services ) system
2. Spectral Allocation and operation.
3. AMPS Control Channels.
4. GSM (Global System Mobile) system.
5. GSM Network Architecture.
6. CDMA (Division Multiple Access) Communication Techniques.
7. Second Generation CDMA.
8. Wireless Communication Channels.

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Chapter No: - 4  
CELLULAR WIRELESS SYSTEM

1. Cellular Network Organization.
2. Frequency Re – use.
3. Increasing Capacity.
4. Operation of cellular system.
5. Mobile Radio Propagation Effects.
6. Hand – off.
7. Signal encoding criteria.
8. Digital Data Analog Signals.

Chapter No: -5  
WIRELESS COMMUNICATION TECHNOLOGY

1. Radiation Patterns.
2. Antenna Types.
3. Antenna Gain.
4. Ground Wave Propagation.
5. Sky Wave Propagation.
6. Line – of – sight propagation.
7. Attenuation and free – space loss.
8. Noise, Multi-path and refraction.

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Chapter No: -6  
FADING IN THE MOBILE ENVIRONMENT

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1. Fading in the Mobile.
2. Multi-path Propagation.
3. Diffraction.
4. Scattering.
5. Effects of Multi-path Propagation.
6. Types of fading.
7. The Fading Channel.
8. Error compensation Mechanism.
9. Diversity techniques.

**PART – 2**  
**BSS**  
Chapter No: - 1  
**CDMA – 2000 PRINCIPLE OF BSS**

1. Introduction.
2. Basic Knowledge of CDMA.
3. Key technology of CDMA.
4. Abstract of Air interface.
5. CDMA Number Planning.

Chapter No: - 2  
**ATM PRINCIPLES**

1. Basic concept of ATM.
2. Basic concepts of IPOA.
3. ATM in CDMA 2000 BSS.

Chapter No: - 3  
**CDMA 2000 BSC HARDWARE SYSTEM CAPACITY**

1. Overview.
2. CSWS (CDMA Switch Sub – rack)
3. CIPS (CDMA Integrated Processing Sub – rack)

Chapter No: - 4  
**CDMA 1XBTS (BASE TRANSCEIVER STATION) 3606 HARDWARE SYSTEM**

1. BTS 3606 system and structure.
2. Function of all BTS 3606 boards.
3. Antenna and feeder system.

**PART – 3**  
**MSC**  
**C-MSC 61SYSTEM OVERVIEW**

1. System features.
2. System structure.
3. Module function.
4. Connection among various modules.

**PART – 4**  
**GSM TECHNIQUE**

1. History and Standard of Cellular Mobile System.
2. Why Cellular?
3. Cellular Mobile System Components.
4. Mobile Switching Centre (MSC).
5. Public Land Mobile Network (PLMN).
6. Types of Cells.
7. Roaming.
8. Registration.
9. Cluster.
10. Frequency Re – use.
11. Interleaving.
12. Adapted Equalization.
13. Modulation techniques.
14. TDMA.
15. Advantages and Disadvantages.
16. Cell Size.
17. Digital Transmission Techniques.
18. Frequency Hopping.
19. Channel Coding.
20. ADC System Structure.
21. Call Handling.
22. Authentication.
23. Commercial Aspects of **GSM**.
24. GSM Structure.
25. Base Station System.
26. Mobile Switching Centre.
27. Operation and Maintenance Centre (OMC).
28. Network Management Centre (NMC)
29. GSM Terrestrial Interfaces.

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30. ABIS (LAPD)
31. BCCH Group (BCCH – CCCH – DCCH).
32. GSM Call and Handover Sequences.
33. GSM Physical Channel Revisited.
34. Error Protection and Detection.
35. GSM Burst Types (Multi-frame & Timing).
36. 51-Frame Control Channel Multi-frame-BCCH/CCCH.
37. Super frame and Hyper frame.
38. Frequency Hopping.
39. Base Band “Hopping” and Fast time “Hopping”
40. ACRONYMS

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