MMU
MULTIMEDIA UNIVERSITY

4G and 5G Radio Access Network

Planning, Dimensioning

and

Optimization

Training Programme
by
Faculty of Engineering
Multimedia University

Overview

This course provides an overview of the processes and techniques used for 4G and 5G radio access network (RAN) planning, dimensioning, deployment, and optimization. It also offers delegates practical insight on market opportunities and new revenue streams that can be enabled through 5G.

Objectives

Upon completion of this course, the attendees are able to:

- Carry out link budget calculations and perform nominal cell coverage and capacity dimensioning for 3GPP-based RANs.

- Understand the factors and techniques to improve RAN coverage, throughput, and capacity.

- Understand RAN planning, dimensioning, deployment, and optimization processes for 4G LTE and 5G NR.

- Understand the key technologies of 5G NR and apply best practices to deploy 5G NR networks.

Target Audience

Operators, vendors, regulators, managers, and engineers either new to, or already working in, telco/mobile communications.

Prerequisite

Familiarity with telecommunications and general engineering terminology is assumed.

Training Methodology

Classroom, hands-on lab work and exercises.

Course Duration

2 days

Content/Outline

4G LTE RAN Planning, Dimensioning, and Optimization
- Fundamentals of Cellular Networks
- Ecosystem of Cellular Communications
- 3GPP Standardization Activities
- LTE Network Architecture & Radio Network Elements
- Frequency Reuse, Duplexing, Coding, Modulation, Multiplexing in LTE
- LTE Radio Resource Management & Frame Structure
- Key Features of LTE-Advanced & LTE-Advanced-Pro
- 3GPP Standards for IoT Connectivity: NB-IoT & LTE-M
- Basics of RAN Planning & Rollout Strategy
- LTE RAN Planning Process
- LTE Nominal Coverage & Capacity Dimensioning, Hands-on Exercises
- Overview of LTE Detailed RAN Planning & Optimization
- Self-Organizing Network (SON)

5G NR Technologies and Deployment Strategies
- Introduction to 5G – Key Requirements & Use Cases
- 5G NR Spectrum & Deployment Strategy
- 5G NR Technologies, Scalable OFDM Numerology, Frame Structure
- LTE/NR Spectrum Co-Existence & Dynamic Spectrum Sharing
- Enabling Technologies for eMBB, mMTC, uRLLC
- 5G NR Cell Throughput Calculation
- 5G Network Slicing
- 5G Network Architecture & Deployment Options
- Physical RAN Deployment Architectures & Network Sharing Mechanisms
- 5G Network Planning & Rollout Considerations

Course Instructor

Dr. Chuah Teong Chee

Dr. Chuah Teong Chee is currently a Professor in Digital Communications at the Faculty of Engineering, Multimedia University in Malaysia. He has served as a Technical Consultant and Research Fellow to Telekom Malaysia on xDSL networks for nearly 10 years. He has conducted multiple corporate training in the areas of wireless/cellular communications and xDSL to the telco industry. His current research interests include resource allocation and optimization for fixed, mobile, and hybrid broadband networks.

Administrative Details

Programme Logistics

Duration: 2 days

Date:
Please refer to the updated dates at https://www.mmu.edu.my/foe/short-courses/

Registration deadline:
Please refer to the updated dates at https://www.mmu.edu.my/foe/short-courses/

Your Investment

Condition		Price per Pax
Regular Fee	Students / MMU Alumni	RM500
	Public	RM800
	Public (Group >5 pax)	RM600
Early Bird Fee	Students / MMU Alumni	RM300
	Public	RM600
	Public (Group >5 pax)	N/A

Method of Payment
Please make payment via bank transfer only. Account details is as below:

Account name: Unitele Multimedia Sdn Bhd
Account number: 86-0090180-2
Bank: CIMB Islamic Bank Berhad

Payment must be made by the registration deadline.

Refund and Cancellation
Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

Disclaimer
Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

Enquiries
Dr. Zubaida Yusoff: zubaida@mmu.edu.my
Dr. Katrina D. Dambul: katrina@mmu.edu.my

Registration Form

To register, please visit this link: https://forms.gle/nPxQYMy2ZDGg7YdD6