Training Course Outline

ITU AND UNIVERSITI TEKNOLOGI MALAYSIA

IN COLLABORATION WITH

IEEE MALAYSIA COMSOC & VTS JOINT CHAPTER

Title	Fifth Generation (5G) Implementation: Practices and Case Studies
Modality	Online instructor led
Dates	27 June to 3 July 2022
Duration	1 week
Registration deadline	20 June 2022
Training fees	Regular Fee : **USD 100 per pax** Discounted Fees are available for group registrations and return participants. See below. **Table:** | No.	Discount Categories	Discounted Fees Per Pax (USD)
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1.	Return participant from previous UTM-ITU trainings	70.00
2.	Group registration with minimum 5 participants	
3.	Group registration with minimum 10 participants	50.00*	 *Please contact UTM or ITU secretariat to obtain the discount code. Terms and conditions apply.
Description	5th Generation technology is here. Globally, various stages of 5G implementations such as trialling, licensing, deploying, limited launches, nationwide launches have taken place. Implementation challenges exist, and innovative deployment approaches are required before the full potential of 5G network and services can be realized. This course aims to equip participants with industry best practises and lessons learned in 5G network implementation.

Code	22OI27822ASP-E

1.LEARNING OBJECTIVES

The learning objectives of the course are
- To equip the participants with the understanding of 5G implementation considerations
- To equip the participants with an understanding of the economics of spectrum management and approaches for spectrum sharing.
- To equip the participants with the understanding of the approaches of network infrastructure sharing and network deployment strategies.
- To equip the participants with communication strategy to achieve public acceptance of 5G roll out.
- To equip the participants with operators' case study and best practices

2. LEARNING OUTCOMES

Upon completion of this training course, participants will be able to acquire the following:
- review the 5G technology
- discuss the 5G implementation considerations
- explain the economics of spectrum management
- elaborate the spectrum sharing approaches
- explain the approaches for infrastructure sharing
- identify the strategies for network deployment
- discuss the communication strategy for publica acceptance of 5G roll-out.
- reflect on operators' case study and best practices.

3.TARGET POPULATION

Executives, managers, engineers, employees from regulators, government organization, telecom operators, semiconductor industry, vertical industries, academia who are dealing with the implementation of 5G network and services. Other institutions and individuals that are dedicated to building their capacity related to 5G Technology are also welcomed to participate.

4.ENTRY REQUIREMENTS

Participants are expected to have background understanding of modern mobile communication networks.

5.TUTORS/INSTRUCTORS

Name of tutor(s)/instructor(s)	Contact details
Prof. Dr. Jafri Din, UTM	jafri@utm.my
Dr. Chee Yen (Bruce) Leow, UTM	bruceleow@utm.my

Dr. Marwan Hadri Azmi, UTM	hadri@utm.my
Mr. Tien Han Chua, UTM	thchua@utm.my
Mr. Aamir Riaz, ITU	aamir.riaz@itu.int
External Invited Speaker	TBC

6.TRAINING COURSE CONTENTS

7.TRAINING COURSE SCHEDULE

Module	Scope
1. 5G Technology Review	• IMT-2020 Vision and Requirements • Key Capabilities of 5G versus 4G • Key usage scenarios • 3GPP Releases update • ITU 5G standardisation progress
2. 5G Implementation Considerations	• Spectrum availability • Investment barrier • Deployment roadblocks • Use cases and verticals readiness • Public resistance
3. Economics of Spectrum Management	• Economics of spectrum • Components of spectrum price • Effective pricing • Innovative licensing • Spectrum auction vs beauty contest • Impact of spectrum prices • Case study
4. Spectrum Sharing	• Spectrum sharing fundamental • Dynamic spectrum sharing • NR and LTE coexistence • Deployment options • Spectrum licensing innovation • Case study
5. Network Infrastructure Sharing	• Passive sharing • Active sharing • Neutral host • Sharing models • Economics of shared infrastructure • Case study
6. Network Deployment Strategies	• Deployment options for brownfield and Greenfield operator: NSA and SA • Balancing coverage and capacity • Roll out Phases
7. Public Acceptance of 5G Roll-Out	• Consumer perspective • Public resistance • EMF health & safety concern • Public education • Case study
8. Commercial Use Cases, Operator's Case Study and Lessons Learned	• 5G verticals • Go-to-market strategies • Commercial Use cases & success stories • Case study and sharing of lesson learned

Date and Time (Kuala Lumpur Time Zone GMT +8)	Module	Activity
27 June 2022 (Mon) 2.30pm to 4.30pm	1. 5G Technology Review	Live lecture and Q&A
	2. 5G Implementation Considerations	Live lecture and Q&A
28 June 2022 (Tue) 2.30pm to 4.30pm	3. Economics of Spectrum Management	Live lecture and Q&A
	4. Spectrum Sharing	Live lecture and Q&A
29 June 2022 (Wed) 2.30pm to 4.30pm	5. Network Infrastructure Sharing: Practices	Live lecture and Q&A
	6. Network Infrastructure Sharing: Guidelines and Regulations	Live lecture and Q&A
30 June 2022 (Thu) 2.30pm to 4.30pm	7. Public Acceptance of 5G Roll-Out	Live lecture and Q&A
	8. Commercial Use Cases, Operator's Case Study and Lessons Learned	Live lecture and Q&A
1-3 July 2022 (Fri-Sun)	Self-paced e-learning Activities	Quiz 1 (Module 1-4, 30%) Quiz 2 (Module 5-8, 30%) Discussion Forum (20%)

8.METHODOLOGY (Didactic approach)

The online instructor-led training course will include:
•	Instructor-led live-streamed lectures
•	Multimedia presentations
•	Discussion forums

The lectures will be presented by modules. Live lectures will be scheduled throughout the week from Monday to Thursday. Recorded lectures will be made available for those who cannot attend the live sessions. Each session will last up to 2 hours, including Q&A interaction. The exact schedule for live lectures will be published on the course e-learning page on ITU Academy.

Discussion forums will be used to allow participants to interact with the trainers and allow participants to exchange knowledge. Discussion topics can be posted by trainers and participants.

All official announcements will be made through the Announcement Forum in the e-learning course page.

9.EVALUATION AND GRADING
The assessment of the participants shall be based on the -time spent on the training and the following parameters:

Evaluation Parameter	Weightage (in %)
Quizzes (Quiz 1 and Quiz 2)	60 %
Participation in Discussion Forum (5% per entry)	20 %
Participation in live lecture and Q&A interaction sessions (10% per session)	20 %

10.TRAINING COURSE COORDINATION

Course coordinator:	ITU coordinator:
Dr. Chee Yen Leow (Bruce) Course Coordinator, Wireless Communication Centre, UTM. Tel: +607-5536087 Fax: +607-5535252 Email: bruceleow@utm.my **Mdm. Hasline Binti Mohamad** Secretariat, Wireless Communication Centre, UTM. Tel: +607-5536106 Fax: +607-5535252 Email: hasline@utm.my	**Mr. Sean Doral** Program Officer, ITU Regional Office for Asia-Pacific 5th Floor, Thailand Post Training Centre, 111 Moo3 Chaengwattana Road,Laksi Bankok 10210,Thailand sean.doral@itu.int (Email) +41 2273 05438 (Works) +66 257 535 07 (Fax)