

National Telecommunications Institute

For Policy Research, Innovation and Training (NTIPRIT)

CERTIFICATE COURSE IN 5G BATCH - 3

Course Starting on 19th May 2022 SCAN to Register for the course or Visit: https://tinyurl.com/5GCertificateBatch3 Last Date to apply 9th May 2021



LEARN 5G FOR A PROFESSIONAL EDGE

Gain a broad, technical understanding of this revolutionary technology through certification course from NTIPRIT, the premier Officers Training Academy of Department of Telecommunications, Government of India.

National Telecommunications Institute (NTIPRIT) announces 3rd Batch of 5G certification course to train and certify Officers of Central / State Government of India. The registration for the course is open to Officers of Government of India and Officers of State Governments of India.



5G networks based on Non-Standalone Access are a commercial reality, and Standalone 5G access will soon follow. In India 5G trials are underway and commercial 5G will be launched soon. This next generation of mobile technology, with features such as Enhanced Mobile Broadband, Ultra Reliable Low Latency Communication and Massive IoT, is set to radically re-shape today's mobile networks. This is why NTIPRIT has launched certification course on 5G for officers of Government of India.

The salient features of this course are:

- 1. Customized for Information and Communication Technology Professionals
- 2. 36-hour content spread over 6 weeks with 3 sessions/week of two hours each
- 3. Blend of sessions by NTIPRIT faculty and experts from Industry including OEMs, TSPs, market leaders, innovators etc.
- 4. Content delivery in online mode
- 5. Frequent Assignments and Quizzes
- 6. Re-attempt of exam allowed
- 7. Recorded sessions for the course content to be made available



TRAINING DELIVERY

The 5G certification course will be an online Live Training within a virtual classroom environment. There will be 3 sessions per week, with each session of 2 hours to best suit the requirements and preferred learning style. Participants can study when and where they want, on a PC, tablet or smart phone.

The topics covered in this certification course would include: -

1	EVOLUTION FROM 1G TO 5G		
	1G, 2G GSM, 2.5G GPRS and 2.75G EDGE		
	IMT 2000: 3G UMTS, WCDMA, HSPA and HSPA+		
	IMT Advanced : 4G LTE , LTE Advanced, LTE Pro		
	IMT2020: Enhancements, Usage Scenarios, Technologies used in 5G		
2	INTRODUCTION TO 5G		
	Standardisation Bodies		
	Timelines & Roadmap		
	IMT 2020 Vision/ Requirement		
	Spectrum for 5G		
	5G New Radio		
	5G Architecture		
	5G Deployment Options		
	5G Global Launches		
	Availability of 5G Devices		
	5G Use cases		

3	SPECTRUM BANDS	8	5G NUMBERING ADDRESSING AND IDENTITIES
	Spectrum Bands for Mobile Communications		UE Identities
	Spectrum Bands for 5G		5G Network Identifier
4	5G AIR INTERFACE		5G Core FQDN
	Spectrum for 5G NR	9	DYNAMIC SPECTRUM SHARING
	Scalable OFDM		Co existence of 5G NR with 4G LTE
	5G NR Numerology		Use of MBSFN subframe
	Resource block		Use of Other Subframe
	Frame Structure		Case Study
	Resource Grid	10	OPEN RADIO ACCESS NETWORK (OPEN RAN) AND 5G
	Use of TDD		Basic Concept of Traditional RAN, vRAN and Open RAN
	BWP		Centralised RAN / Cloud RAN/ BBU Hotel
	Carrier Aggregation		3GPP 5G NR Architecture
	5G NR Physical Channels and Signals		CIPRI and eCIPRI
	SS block		Open RAN Groups : ORAN and TIP, SCF
	5G NR Synchronisation Procedure		ORAN Architecture by these Groups
	Use Cases	11	LINK BUDGET ANALYSIS FOR 5G
5	MIMO AND BEAM FORMING IN 5G NR		Losses/ Gains in Link Budget
	Introduction to MIMO		Receiver Sensitivity
	Beam Forming in 5G		Sample/Generic Link Budget
6	5G CORE		Scenarios for Link Budget
	5G system Architecture		UMi-street canyon/ UMa/RMa/ RMi/ InF
	Function of each Network Function of 5G core		Antenna Modeling
	5G reference point Architecture		Propagation Models for Link Budget
	5G Service based Architecture		Link Budget Calculation
	Network Function Virtualisation	12	NETWORK FUNCTION VIRTUALISATION AND 5G
	Network Slicing		Purpose Built Network Nodes
	Multi Access Edge Computing (MEC)		Concept of Softwarisation, Virtualisation and Claudification
7	QUALITY OF SERVICE IN 5G	13	TRANSMISSION REQUIREMENT FOR 5G
	PDU Session and QoS Flow		Backhaul , Midhaul and Fronthaul for 5G
	5G QOS Architecture		Self Backhaul (Integrated Access and Backhaul) in 5G
	Comparison with 4G	14	USE CASES OF 5G IN VARIOUS SECTORS
	Default QoS Flow		5G for Industry 4.0
	GBR QOS Flow		5G for Agriculture
	QoS Rule, QoS Profile and SDF Template		5G for other Sectors
	QoS Flow and Network Slice	15	LAWFUL INTERCEPTION AND MONITORING IN 5G
	QoS Types and parameters		DoT License Conditions related to LIS/LIM
	Alternate QoS Profile		5G Architecture for LIS/LIM
	5QI Characteristics	16	5G SECURITY
	Standard values of 5QI		Securiy Enhancement in 5G
	Use Cases		New Challenges and its mitigation



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