General Information on APT Training Course

1. **Title of Training Course:** 5G and IoT Network Infrastructures integrated with AI ingredients to deliver future values (Phase 1)

2. **Organization (hosted by):** NT Academy, National Telecom Public Company Limited

3. **Duration Phase 1 (Online Training):** 7 July – 4 August 2025

4. **Place/Venue:** URL: https://ntacademy.ntplc.co.th/apt/
   NT Academy will provide the online learning management system and staffs. Trainers are required to have computer to get access to the online system during the training period.

5. **Objective:**

The objectives of this course are:

- to provide knowledge for understanding of 5G/IoT network infrastructures and their prospective
  design applications,
- to provide knowledge for understanding of the future 5G services, especially the industry's vertical market concept and IoT-based digital services,
- to provide knowledge and understanding of how to integrate AI or Smart Computing to create 5G/IoT-based digital services,
- to describe the computing paradigm shift from the traditional network concept to digital infrastructure/transformation in the future society and its effect upon human life.

6. Abstract of the Course

The recent innovative intelligent connectivity, the combination of high-speed, low-latency 5G network, cutting-edge artificial intelligence (AI), and the linking of billions of smart devices through the 5G and Internet of Things (IoT) infrastructure, will enable transformational new capabilities to implement new 5G business verticals, ranging from smart healthcare, autonomous vehicles, smart transportation, automation factories, etc.

The training will provide a comprehensive overview of those innovative technologies that would create the intelligent connectivity for 5G and IoT networks. Participants will have hands-on experience in developing the technological concept and its implementation so that we can design and utilize the intelligent connectivity in the 5G and IoT network infrastructure more efficiently in the future digital society.

The 2nd phase fact-to-face training, as designed to be the consecutive course from the 1st phase online learning, will study more deeply in detail how to build the Intelligent connectivity with the implementation of 5G, IoT, and AI technologies. When these three revolutionary technologies are combined, they will enable transformational new capabilities in transport, entertainment, industry, and public services, and much more besides. Additionally, this training course will provide necessary knowledge on 5G/6F Frequency spectrum policy ad regulation, IoT Industry Digitization to create the IoT business opportunity challenge issues of 5G and IoT network infrastructure, especially security concerns, and the paradigm concept of cloud-based and mobile computing, edge and Fog computing to build AI-based Micro-service in 5G/6F and IoT network Infrastructure.

7. Learning method

- **Phase 1 (Online Training):**
  - Lecture and reading assignment
  - Chat session
  - Individual assignment

8. Course Schedule and Outlines:

The details of schedule are shown as the following:

Schedule	Topic	Name of Lectures
Week 1 **(7 – 13 Jul)**	• **Basic concept of 5G network connectivity** The latest technology development in telecommunications has shifted from telecom services for individual customers to digital services aiming for industrial communications to help digitize the	**Pongthiti Pongsilamanee, PhD.** **Senior Instructor** **NT Academy**

Schedule	Topic	Name of Lectures
	economy of the country and contribute towards global digital transformation. 5G technology is the innovation for mobile wireless networks, bringing the new concept of Internet of Things, machine-to-machine communications, so that 5G networks would be the fundamental infrastructure to create more variety of services that we have ever experienced before. This session describes quick learning from the history of mobile wireless evolution, starting from 2G as namely GSM and CDMA to 3G, 4G and eventually 5G network and technology, then we would learn the main concept of 5G network and its implementation, such as the 5G frequency spectrum, radio path techniques, core network techniques, network architecture, and the migration of 3G/4G/5G network as well as their standards (ITU, 3GPP). Understanding the key features and benefits of 5G, such as increased speed, reduced latency, enhanced capacity and coverage, and 5G new use cases, is also provided.	
	First (1st) week assignment distribution	
Week 2 **(14 – 20 Jul)**	• **Basic concept of IoT network connectivity** The Internet of Things (IoT) represents the concept of a massive system where things on the Internet communicate through omnipresent sensors. Since the inception of the Internet	**Pongthiti Pongsilamanee, PhD.**

Schedule	Topic	Name of Lectures
	of Things, consumers have connected smart devices to the network at an exponential rate, bringing us closer to a future where everyday things all are interconnect. This module, hence, provides the following learning modules: 1. Overview of IoT Platform and network architecture. 2. IoT standards, IoT value chain, and eco-system. 3. Understanding IoT Communication Protocols and Standards, such as MQTT, CoAP, DDS, LWM2M, etc. 4. IoT use cases and their applications, such as smart homes, smart cities, wearables, industrial IoT, and healthcare IoT	
	Second (2nd) assignment distribution	
	First (1st) Online Chat Platform	
Week 3 **(21 – 27 Jul)**	• **Security Concerns for IoT implementations** Threats to IoT are some of the biggest issues we would face in modern communications. We rely more on technology, but it is also increasingly threatened, and the impact of IoT security attacks may be devastating. This module, hence, provides a basic concept of IoT security, as follows 1. Understanding Major Security Risks and Issues in IoT	**Jesada Sivaraks,** **PhD.** **Head of Government and Industry Relationship, Ericsson Thailand**

Schedule	Topic	Name of Lectures
	2. Designing and implementing Security into IoT	
	Third (3rd) assignment distribution	
	Second (2nd) Online Chat Platform	
Week 4 (28 Jul – 4 Aug)	**Assignment submission (1st, 2nd, 3rd week assignment and Final Report)**	

9. Qualifications of Trainees

Applicants should be:

(1) Engineers or IT personnel who are working in telecommunications network/service providers relating to 5G services, or

(2) Personnel who are working in the national regulatory body or government agency and in charge of 5G service policy and regulations.

10. System Requirement (Phase 1 (Online Training))

- OS: Windows XP or higher
- Browser: Comply with Internet Explorer 7 or higher
- Additional Software: Flash Player
- Internet Connection: Broadband Internet is strongly recommended as part of course material will be provided as movie.

11. Regulation:

Selected trainees are required to actively participate in the course from the beginning to the end.

12. Contact Person:

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