A cellular network consists of a radio network, one or more core networks, and a services network. The LTE Evolved Packet Core (EPC) is the next-generation core network that is expected to replace the existing/legacy core networks. A typical 3G core network consists of a Circuit Switched Core Network (CS-CN) and a Packet Switched Core Network (PS-CN). The EPC is an all-IP packet-switched core network that can connect to a variety of radio networks such as the LTE-based E-UTRAN, WCDMA-based UTRAN, GERAN, CDMA2000 1x, 1xEV-DO/HRPD, and WiMAX. The EPC is formally defined by 3GPP as part of the Evolved Packet System (EPS) that uses an LTE-based EUTRAN. This eLearning course provides an overview of the EPC, including the architecture, basic functions, its role in session setup, and its support for inter-technology mobility.

Intended Audience
This course is intended for those seeking a fundamental understanding of how EPC works in the next-generation cellular network. This includes those in a design, test, systems engineering, sales engineering, network engineering, or verification role.

Learning Objectives
After completing this course, the student will be able to:

- Summarize key benefits and challenges of the EPC
- Specify roles of various EPC components
- Explain the functions (e.g., authentication and security) performed by the EPC
- Describe a high-level session setup using the EPC
- Discuss how EPC supports inter-technology handover

Suggested Prerequisites
- Welcome to IP Networking (eLearning)

Complementary Courses
- [LTE_102] LTE Overview (eLearning)

Course Outline

1. Introduction to LTE EPC
   1.1. Setting the stage
   1.2. Introduction to LTE
   1.3. 3GPP evolution path

2. EPC Architecture
   2.1. Legacy (3G) architecture
   2.2. LTE architecture
   2.3. EPC interfaces and protocols

3. EPC Registration
   3.1. Authentication and security
   3.2. Default bearer setup

4. Service Addition
   4.1. Introduction to service data flow and EPS bearers
   4.2. QoS
   4.3. Service addition and dedicated bearer setup
   4.4. PMIPv6-based EPS bearer

5. Intra-LTE and Inter-3GPP Mobility
   5.1. Introduction
   5.2. Intra-LTE mobility without S-GW
   5.3. Inter-3GPP mobility

6. Inter-technology Handovers
   6.1. Mobile IP techniques
   6.2. LTE <-> non-3GPP Interworking Interfaces
   6.3. Optimized and non-optimized handovers

7. Summary

Put It All Together
Assess the knowledge of the participant based on the objectives of the course