

SEMESTER <i>Seventh</i>	DEPARTMENT <i>Telecommunications Engineering</i>	COURSE TITLE <i>Telephone Systems</i>
COURSE CODE <i>ET709</i>	HOURS 3 UNITS 3	COURSE SPECIFICATIONS <i>Theoretical Content</i>
1. Basics of Telephone Sets: <ul style="list-style-type: none"> ➤ Principles of operation of telephone set components (transmitter – receiver – dial pad – electronic ringer – hybrid transformer). ➤ Cordless telephones CT1 and CT2. ➤ Answering machines. ➤ Echo cancellation methods. 		
2. Foundations of Digital Telephone Exchanges: <ul style="list-style-type: none"> ➤ Switching Unit. ➤ Control Unit (incoming signals unit, outgoing signals unit, signal processing unit, and clearing signal unit). ➤ Interface Unit. ➤ Functions of a SMU (Subscriber Matching Unit). ➤ Functions of a SLIC unit (BORSHT functions). ➤ Main Distribution Frame. 		
3. Signaling: <ul style="list-style-type: none"> ➤ Subscriber signaling. ➤ Signaling principles used between exchanges. ➤ CCS and CAS methods. ➤ Signaling networks. 		
4. Digital Switching in Telephone Exchanges: <ul style="list-style-type: none"> ➤ Principles of space switching. ➤ Principles of time switching. ➤ Multiplexing and Demultiplexing. 		

5. Network Hierarchy:

- Telephone network hierarchy.
- Network hierarchy according to The ITU-T (International center, Quaternary center, Tertiary center, Secondary center, Primary center, and Local exchange).

6. Numbering Plan:

- Requirement of the numbering plan.
- A telephone number.
- Rules for numbering.
- Fixed number length.
- Variable number length.

References:

1. Tarmo Anttalainen, *Introduction to Telecommunications Network Engineering*, Artech House.
2. Michael Noll, *Introduction to Telephones & Telephone Systems*, Artech House.
3. Louis E. Frenzel, *Communication Electronics*, McGraw Hill.
4. *Understanding Telecommunications*, Ericsson Telecom AB.