

# VE489 Computer Networks

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## Highlights of Chapter 1

### 1 Requirements and Advice

In this chapter, we will introduce the basic but the most important concepts of computer networks. Students are expected to fully understand these concepts. **Never ever memorize these concepts without really understanding them. Use examples and practice to study these concepts.**

### 2 Topics

Important topics that will be covered in this chapter include (but are not limited to):

- What is a computer network? How about a communication network?
- The architecture of telephone and telegraph, which leads to the concepts of message switching and circuit switching
- The architecture of computer networks and examples
- The example of visiting a website via the Internet
- The protocol stack of a computer network: services, layers, and protocols
- Different protocol stack models
- Specifications and standards

### 3 Technical Terms

Do you really understand the following technical terms? If not, study the class notes and textbooks to find out the details.

- *Message switching, circuit switching, packet switching*
- *Protocol stack, layers, and services*
- *Key layer functions: physical, data link, routing, transport, application*
- *Connection versus connectionless communications*
- *Hop-by-hop versus end-to-end communications*
- *Error control, congestion control, and flow control*
- *Unicast, multicast, and broadcast*
- *Network topology: point-to-point, point-to-multipoint, ad hoc, mesh*