

# EEE328

# Digital Signal Processing

Ankara University

Faculty of Engineering

Electrical and Electronics Engineering Department

# Continuous-Time and Discrete-Time Systems

EEE328 Digital Signal Processing

Lecture 2

# Agenda

- Continuous-Time Systems
- Discrete-Time Systems

# Continuous-Time Systems

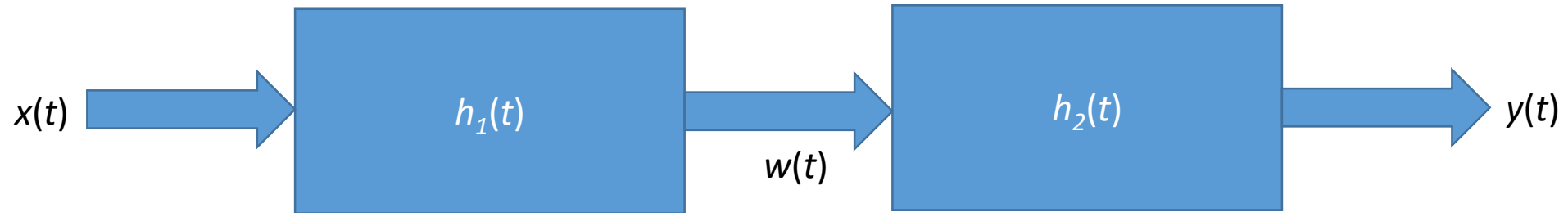


$x(t)$ : Continuous-time input signal

$y(t)$ : Continuous-time output signal

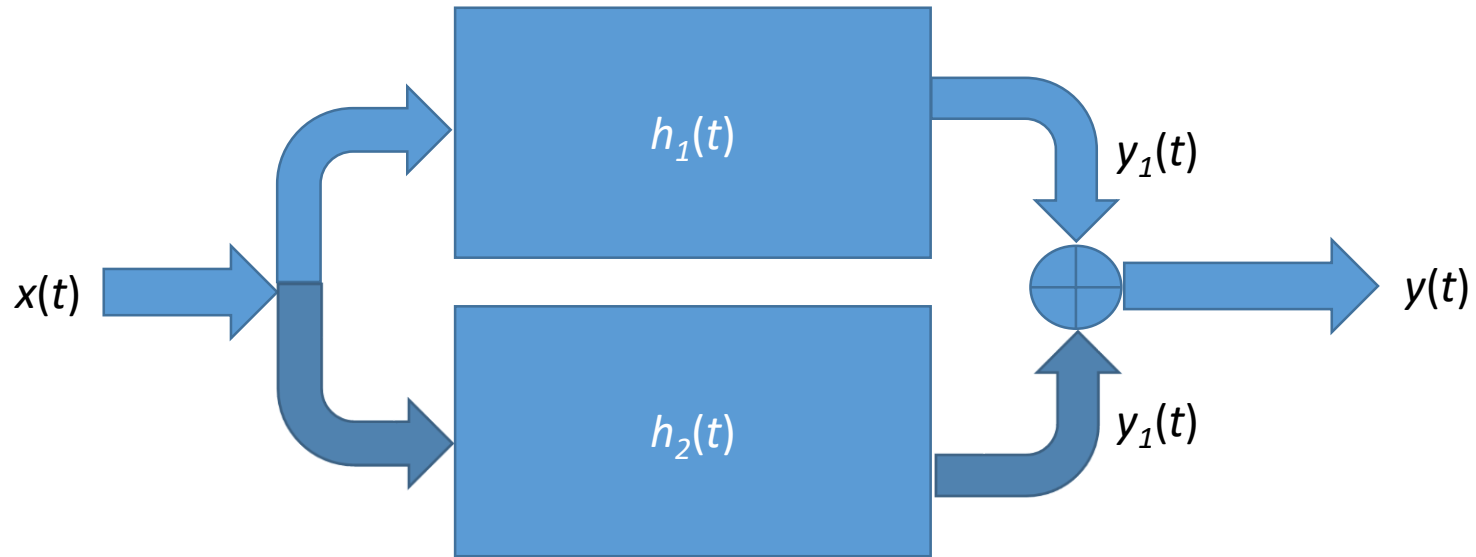
$h(t)$ : Continuous-time impulse response

# Continuous-Time Systems



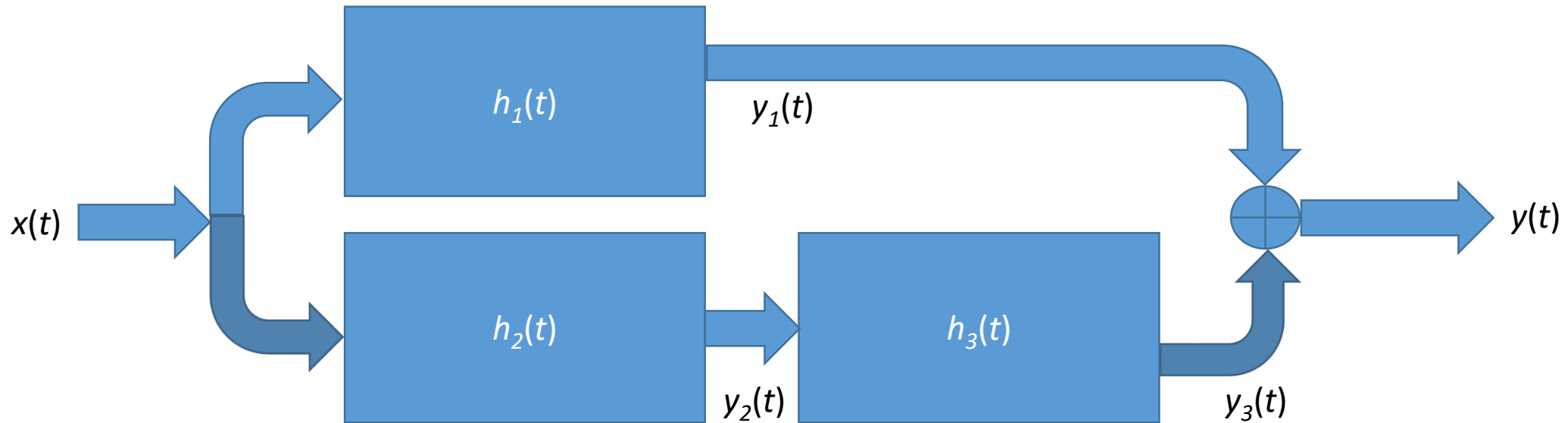
Cascade (series) interconnection of continuous-time systems

# Continuous-Time Systems



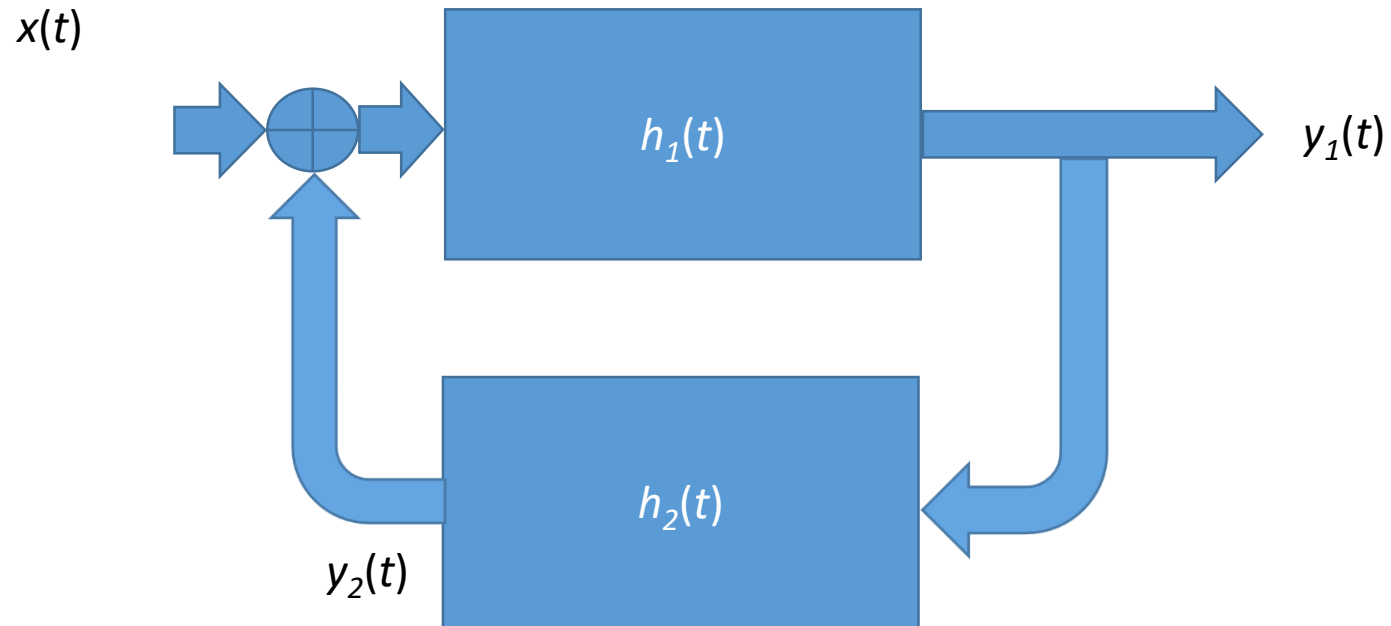
Parallel interconnection of continuous-time systems

# Continuous-Time Systems



Parallel-series interconnection of continuous-time systems

# Continuous-Time Systems



Feedback interconnection of continuous-time systems



# Discrete-Time Systems

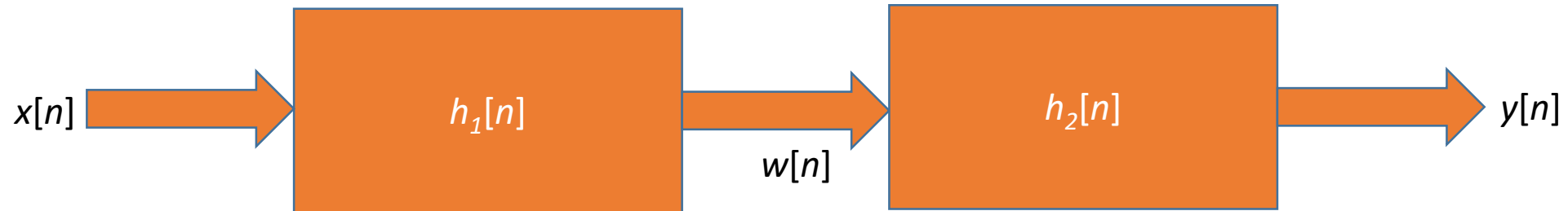


$x[n]$ : Discrete-time input signal

$y[n]$ : Discrete-time output signal

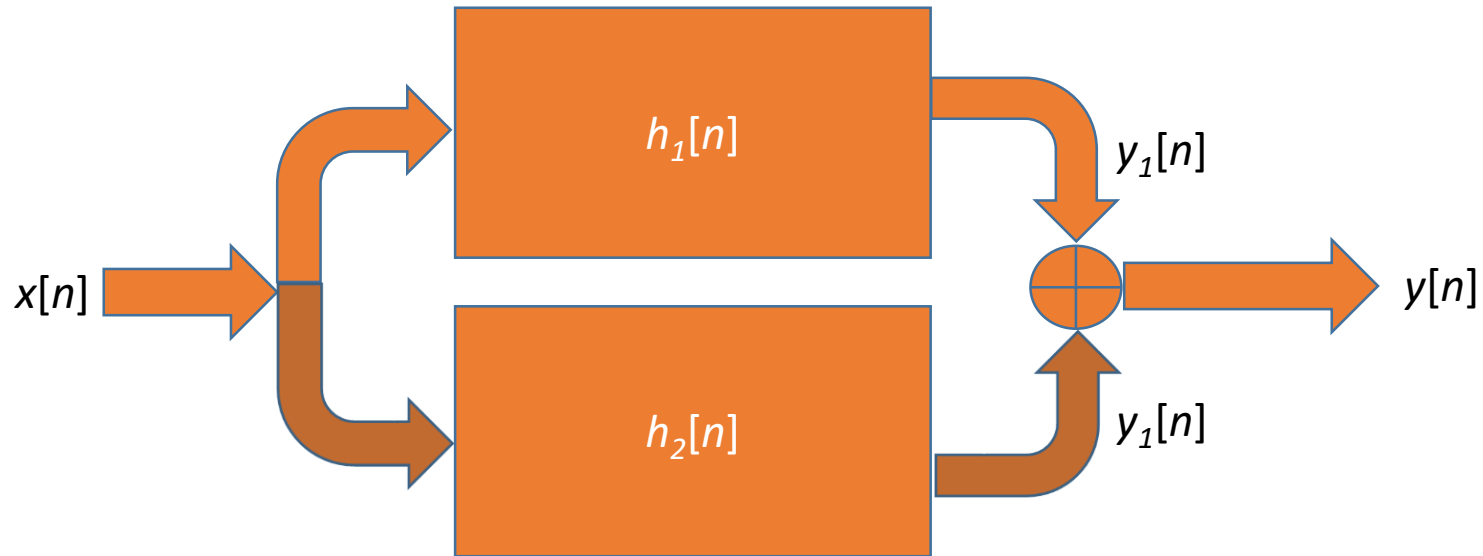
$h[n]$ : Discrete-time impulse response

# Discrete-Time Systems



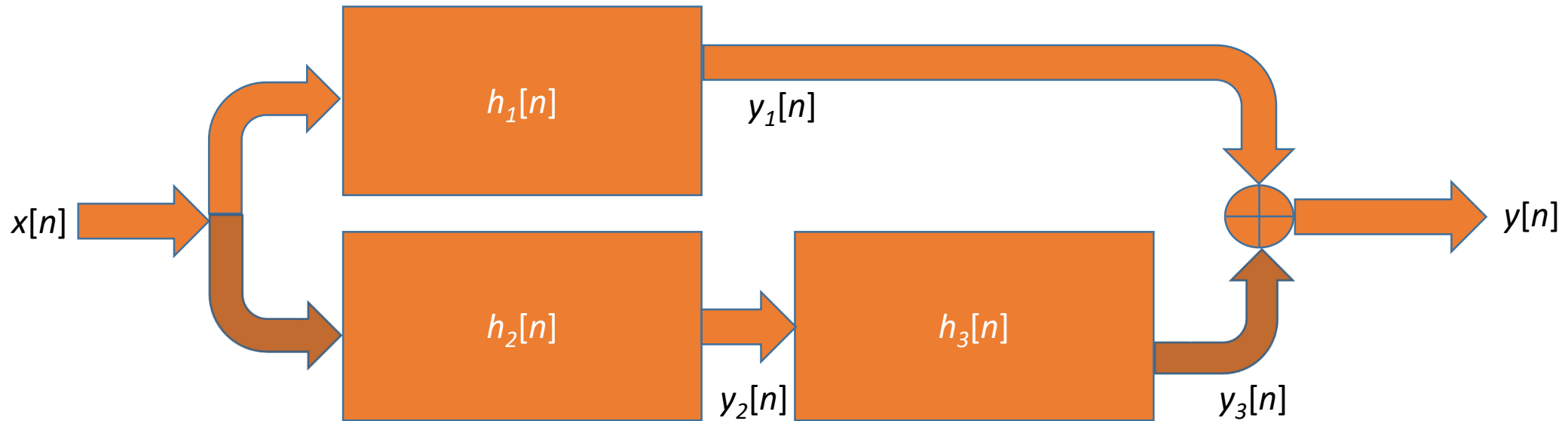
Cascade (series) interconnection of discrete-time systems

# Discrete-Time Systems



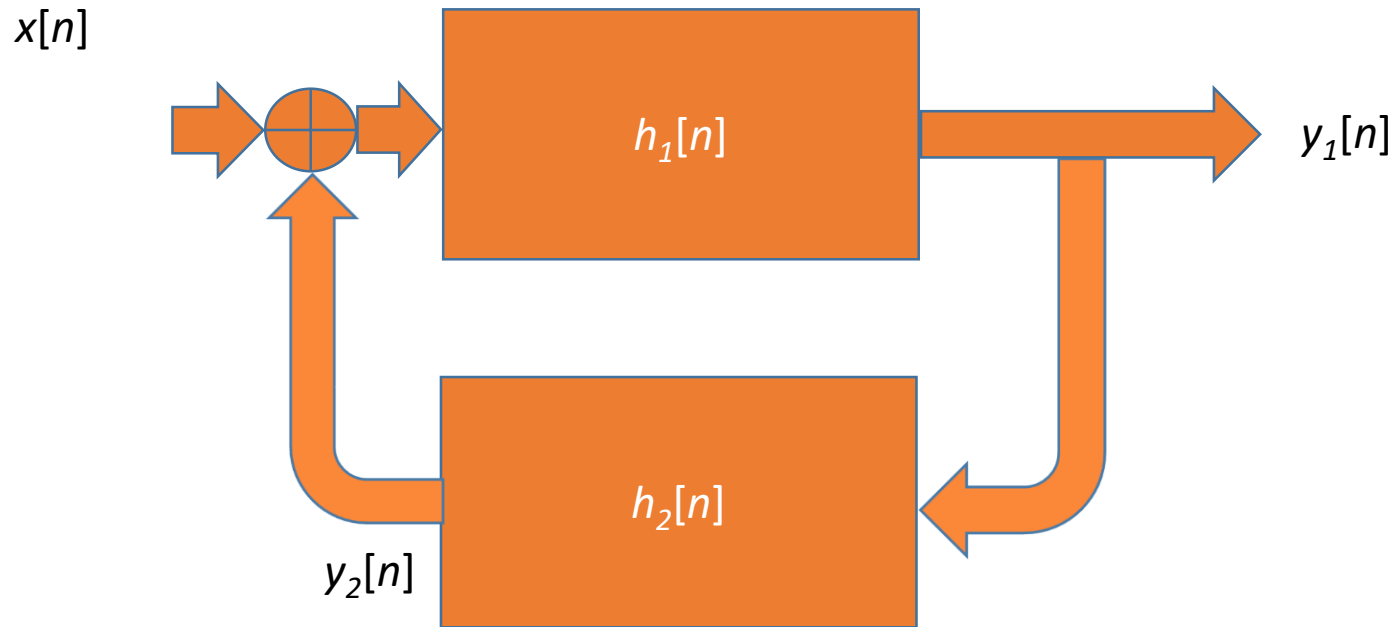
Parallel interconnection of discrete-time systems

# Discrete-Time Systems



Parallel-series interconnection of discrete-time systems

# Discrete-Time Systems



Feedback interconnection of discrete-time systems

# References

- Signals & Systems, Second Edition, A. V. Oppenheim, A. S. Willsky with S. H. Nawab, Prentice Hall, 1997
- Discrete-Time Signal Processing, Second Edition, A. V. Oppenheim, R. W. Schaffer with J. R. Buck, Prentice Hall, 1999