*University of Kurdistan*

# ARTIFICIAL NEURAL NETWORKS

(Fall Semester, 2018)
Department of Electrical & Computer Engineering

## INSTRUCTOR

H. BEVRANI

## OUTLINE

1. Introduction and History
2. Real Neurons and Nervous System
3. Feed-forward and Feedback Structures
4. Learning Modes
5. MLP and BP Training
6. BP and Dynamic ANN
7. Other ANNs
8. Identification/Modeling Applications
9. ANN-based Control Systems
10. Neuro-Fuzzy Systems

## GRADING

- Homework & Class Activity: 15%
- Midterm Exam: 20%
- Final Exam 40%
- Project: 25%

## REFERENCE

[1] H. Bevrani, **Course Lecture Notes**, Fall Semester, University of Kurdistan, 2018.
[2] M. Fathi, H. Bevrani, **Optimization in Electrical Engineering**, Chapter 7, Springer, Expected 2019.

---------- *Optional for Reading:*

[3] M. M. Gupta, et al., **Static and Dynamic Neural Networks: From Fundamentals to advanced Theory**, IEEE Press & John Wiley, 2003.

[4] M. T. Hagan, et al., **Neural Network Design**, PWS Publishing Co., 1996.

[5] J. Sarangapani, **Neural Network Control of Nonlinear Discrete-Time Systems**, Chapter 1, CRC Press, 2006.