نموذج (هـ)

Brief Course Description

Course number: ECE 477	Course name: Introduction to Information Theory and Coding
لغة تدريس المقرر: English	Pre-requisites: ECE 204 , ECE 371
Credit hours: 3 (3+ 0 + 0)	Course level: Elective-Fifth year

Course Description وصف المقرر :

Review of probability theory. Entropy, Mutual information. Data compression. Huffman coding. Universal source coding. Channel capacity. Block codes and hard-decision decoding. Convolutional codes and soft-decision decoding.

Course objectives أهداف المقرر :

- ✓ To familiarize the students with the notions of entropy, compression, mutual information, and channel capacity.
- ✓ To explain the different data compression schemes and their applications.
- ✓ To explain the basic channel coding schemes and their applications.
- ✓ To acquire the skills to simulate common source coding and channels coding schemes.

Course Outcomes مخرجات التعليم:

Upon completing the course, the student should be able to:

- Derive and calculate the entropy and mutual information for basic source and channel models.
- Understand the principles of source coding and apply compression techniques to practical situations.
- Grasp the notion of channel capacity and its derivation for AWGN channels.
- Understand the encoding and decoding of the different channel coding techniques; and their use in current communication systems.
- Design and implement linear block codes or convolutional codes to meet certain requirements.

Textbook and references الكتاب المقرر والمراجع المساندة:

Book	Authors	Publisher	Publication year
Applied Coding and Information Theory for Engineers	R. Wells	Prentice Hall	1999
Coding and Information Theory	R. W. Hamming	Prentice Hall	1986
Modern Digital and Analog Communication Systems	Lathi B. P.	Oxford University Press	2018, New 5th Edition
Error Control Coding: Fundamentals and Applications	S. Lin and D. J. Costello	Prentice Hall	2004