

University of Salahaddin-Hawler
College of Engineering
Electrical Department

Course Book
Course Code: EE411
Course Title: Digital Communication
Class: 4th year E/C
Academic Year: 2021-2022

Instructor: Professor Dr Samah Abdulkareem Mustafa

Class schedule: Sunday 9:00-11:00, Tuesday 10:00-11:00
Office Hours: Sunday 11:00-1:00, Tuesday 11:00-12:30 & Wednesday
10:00-1:00

Course Objectives:

The class offers the main topics in digital communication field and specifically its motivations are

- To introduce digital communication system; the basic elements, the main object and operation of each
- To portray the differences between analog (that covered earlier in third year) and digital communication
- To depict the procedures of converting analog information signal to digital in different forms, and to show the advantage and disadvantage of this conversion
- To introduce the multiplexing used with discrete and digital signals of multi users
- To clarify different types of binary and multilevel digital modulation
- To present the conditions of distortion less transmission
- To study the detection theory of an error in binary transmission
- To make the student familiar with spread spectrum systems and its types as direct sequence, Frequency hopping. Define the main characteristics of these systems and its robustness
- To enable the student how to deal with different channel's impairments like noise by studying matched filter

References

- Introduction to Communication Systems by Ferrel G. Stremler

- Digital Communications by John G Proakis
- Digital Communications by Edward A. Lee and David Messerchmitt
- Digital Communication Communications by Ian Glover
- Communication Systems by Simon Haykin

Grades:

- 25% for two scheduled exams
- 15% for homework and quizzes
- 60% for final exam

Scheduled Topics

Week	Topic
1	Introduction to Digital Communication system
2	Sampling Theorem, PAM, PWM and PPM
3	PCM, DPCM and DM
4	PAM/TDM and PCM/TDM
5,6	Binary Digital modulation; ASK, PSK, FSK
7	MSK, GMSK
8,9	Multilevel Digital Modulation; MPSK, MQAM, MFSK
10	Pulse Shaping
11,12	Error detection in Binary Transmission
13,14	Spread Spectrum systems; DSSS, FHSS and CDMA
15	Matched Filter