

1. Course Name:					
Digital communication					
2. Course Code:					
CET3105					
3. Semester / Year:					
Fisrst/2025					
4. Description Preparation Date:					
22-11-2025					
5. Available Attendance Forms:					
Weekly (Theory: 2 hours, Practically: 2 hours)					
6. Number of Credit Hours (Total) / Number of Units (Total)					
Theory: 30 Hours Practically: 30 hours Total: 60 hours Total Units: 5					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Shaimaa H. Abd Email: shaymaa.h.abed@uotechnology.edu.iq					
8. Course Objectives					
Course Objectiv	1. to understand the main concepts of digital modulation 2. To deal with the main problem of transmission of digital data. 3. To be able to distinguish between different type of digital modulation 4. To understand the different forms of pulse modulation like: PAM, PWM and PPM. 5. To understand the operation way of TDM. 6. Understand the operation and advantages of each of PCM, DPCM, Delta Modulation (DM) and Delta-Sigma Modulation.				
9. Teaching and Learning Strategies					
Strategy	The main strategy that will be adopted in delivering this module is encourage students' participation in the exercises, while at the same ti refining and expanding their critical thinking skills. This will be achiev through classes, interactive tutorials and by considering type of sim experiments involving some sampling activities that are interesting to students.				
1. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	Th.:2 Pr.: 2	-understand different types of signals. -the student understand the main function of each block in each part of communication system	Signal types, General block diagram of digital communication	Lect. & Lab.	quiz
2	Th.:2 Pr.: 2	Understand the Main Advantage and disadvantage for each of digital modulation and digital coding process.	Advantage and disadvantage of digital modulation, digital coding	Lect. & Lab.	Quiz
3	Th.:2 Pr.: 2	Understand the process of sampling and the main concept of PAM.	Sampling theorem, Pulse Amplitude Modulation (PAM),	Lect. & Lab.	Homework
4	Th.:2 Pr.: 2	Make the student capable to differentiate between PAM, PWM and PPM	Pulse width and Pulse Position Modulation (PWM & PPM),	Lect. & Lab.	Exam
5	Th.:2 Pr.: 2			Lect. & Lab.	Quiz
6	Th.:2 Pr.: 2	Provide student enough knowledge about TDM. And the understand the quantization process in order to know the PCM	Time Division Multiplexing (TDM) , Pulse Code Modulation (PCM),	Lect. & Lab.	Homework
7	Th.:2 Pr.: 2		Mid-term Exam	Lect. & Lab.	Exam
8	Th.:2H Pr.: 3H	Understand the Limitation and Modifications of PCM	Noise Consideration in PCM, Limitation and Modifications of PCM	Lect. & Lab.	Quiz
9	Th.:2H Pr.: 3H	Recognize difference between DPCM and DM	Differential PCM (DPCM), Delta Modulation (DM),	Lect. & Lab.	Homework
10	Th.:2H Pr.: 3H	Understand Delta-Sigma Modulation	Delta-Sigma Modulation	Lect. & Lab.	Exam
11	Th.:2H Pr.: 3H	Provide a clear introduction about types of digital modulation	Baseband modulation (Digital Modulation)	Lect. & Lab.	Quiz
12	Th.:2H Pr.: 3H	Modulation and demodulation process of ASK.	Amplitude Shift Keying (ASK) [Modulation and demodulation].	Lect. & Lab.	Homework

13	Th.:2H Pr.: 3H	Modulation and demodulation process of FSK	Frequency Shift Keying (FSK) [Modulation and demodulation],	Lect. & Lab.	Exam
14	Th.:2H Pr.: 3H	Modulation and demodulation process of PSK in term of coherent and non-coherent process.	Phase Shift Keying (PSK) [Modulation, Coherent and Non-coherent Detection] Differential PSK.	Lect. & Lab.	Quiz
15	Th.:2H Pr.: 3H	Understand the generation of QPSK	Quadrature Phase Shift Keying (QPSK)	Lect. & Lab.	Homework

2. Course Evaluation

The grade distribution is as follows:

Assessment: Formative 40 marks, Monthly exam 10 marks

Final exam: Theory 40 marks, Practical 10 marks

3. Learning and Teaching Resources

Required textbooks (curricular books any)	Sarkar N., Elements of Digital Communications, first edition, 2003
Main references (sources)	- Haykin S., Introduction to Analog and Digital Communications, second edition, 2007.
Recommended books and references (scientific journals, reports...)	Any publicly available reference related to digital communication.
Electronic References, Websites	www.coursera.org