Faculty: Engineering Technology	
Department: Energy	**Program: Bachelor Degree**
Academic year: 2023-2024	**Semester: 3^{rd} (Fall)**

Course Plan

First: Course Information

Course No. 0906404	***Course Title:*** Communications systems principles	***Credit Hours:3***
Prerequisite: 0906410	***Section No.: 1***	***Lecture Time:*** Sun – Mon- Tue – Wed 1:15-12:00
Type Of Course:	☐ ***Obligatory Faculty Requirement*** ***Elective*** ☐ ***University Requirement*** ☐ ***ObligatoryUniversity Requirement*** ☐ ***FacultyRequirement*** ☐ ***Course Elective SpecialtyRequirementObligatorySpecialization requirement***	
Type of Learning:	☑ ***Face-to-Face Learning*** ☐ ***BlendedLearning(2 Face-to-Face + 1Asynchronous)*** ☐ ***Online Learning (2 Synchronous+1 Asynchronous)***	

Second: Instructor's Information

Name: **Dr. Hani Attar**		***Academic Rank:*** **Assistant Professor**		
Office Number:222 l		***Ext. Number:2029***	***E-mail:*** **Hattar@zu.edu.jo**	
Office Hours:	***Sunday*** ***10-11***	***Monday*** ***11-12***	***Tuesday*** ***10-11***	***Wednesday*** ***11 -12***	***Thursday*** ***10-11***

Third: Course Description

Review of Fourier transform and filters. Amplitude modulation (AM, DSB, SSB, VSB). Angle modulation (FM, PM). Sampling, Quantization, PCM, DPCM, DM. Multiplexing. Line coding. Baseband channel and ISI. Digital modulation (PSK, ASK, FSK, and M-ary). Power spectra of digital signals. Synchronization.

Fourth: Learning Source

Main Reference:	"CommunicationSystems", bySimonHaykin, 4thedition,JohnWiley&sons Inc.	
Author: SimonHaykin	***Issue No.:***	***Publication Year:*** 2001
Additional Sources&Websites:	• •	
Teaching Type:	☒ ***Classroom*** ☐ ***Laboratory*** ☐ ***Workshop*** ☐ ***MS Teams*** ☐ ***Moodle***	

Fifth: Learning Outcomes

Course Code	***Course IntendedLearning Outcomes (CILOs)***	***Connection To Program ILOs Code***
Knowledge		
**K1	**Determine** the characteristics of the ideal and practical filters.	*PK1
K2	**Analyze** various methods of AM modulation and demodulation systems.	PK2
K3	**Analyze** FM modulation and demodulation systems.	PK3
Skills		
***S1	**Explain** the FDM and the digital multiplexing and hierarchy standard	PS1
S2	**Convert** the analog signal to a digital signal using the PCM system.	PS2
S3	**Explain** the binary digital modulation schemes and the required BW; ASK, PSK, and FSK.	PS3
Competencies		
****C1	**Determine** the energy spectral and power spectral densities for ASK, PSK and FSK.	PC1

*** P: Program, **K: knowledge, ***S: skills, ****C: competencies**

Sixth: Course Structure

Lecture Date	Intended Teaching Outcomes(ILOs)	Topics	Teaching Procedures*	TeachingMethods***	References***
2024 / 7 / 14	A1	Random processes	General discussions	Discussion and problem Solving	Energy Engineering
2024 / 7 / 15	A2	Random processes	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 16	A3	Random processes	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 17	B1	Continuous .Wave Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 21	B2	Continuous .Wave Modulation	At least one exam will be held suddenly during the semester	Discussion and problem Solving	Energy Engineering
2024 / 7 / 22	B3	Continuous .Wave Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 23	A1-B1	Pulse Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 24	A2-A3	Pulse Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 28	A2-B1	Pulse Modulation	General discussions	Discussion and problem Solving	Energy Engineering
2024 / 7 / 29	C	Signal.Space Analysis	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 30	A1	Signal.Space Analysis	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 7 / 31	A2	Signal.Space Analysis	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 4	A3	Passband Digital Trans mission	At least one exam will be held suddenly during the semester	Discussion and problem Solving	Energy Engineering
2024 / 8 / 5	B1	Passband Digital Trans mission	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 6	B2	Passband Digital Trans mission	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 7	B3	Spread – spectruns Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 11	A1-B1	Spread – spectruns Modulation	General discussions	Discussion and problem Solving	Energy Engineering
2024 / 8 / 12	A2-A3	Spread – spectruns Modulation	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 13	A2-B1	Multiuser Radio Cons Munications	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering

2024 / 8 / 14	A1	Multiuser Radio Cons Municutions	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 18	A2	Multiuser Radio Cons Municutions	At least one exam will be held suddenly during the semester	Discussion and problem Solving	Energy Engineering
2024 / 8 / 19	A3	Fundam ental limits in information theory	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 20	B1	Fundam ental limits in information theory	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 21	B2	Fundam ental limits in information theory	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 25	B3	Error – Control Coding	General discussions	Discussion and problem Solving	Energy Engineering
2024 / 8 / 26	A1-B1	Error – Control Coding	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
2024 / 8 / 27	A2-A3	Error – Control Coding	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering
/ 8 / 28 2024	A2-B1	Error – Control Coding	Review the previous lecture, then explain the current lecture	Discussion and problem Solving	Energy Engineering

* Learning procedures: (Face-to-Face, synchronous, asynchronous). * * Teaching methods: (Lecture, video…..). ** * Reference: (Pages of the book, recorded lecture, video….).

Seventh: Assessment methods

Methods	Grade	Date	Platform	CLO'S
First Exam	20	Fixed by the Department	Classroom	S-S
Second Exam	20	Fixed by the Department	Classroom	S-K
Assign, Quizzes &Participation	10	During Semester	Classroom+Moodle	All CLO'S
Final Exam	50	Fixed by the Department	Classroom	All CLO'S

Eighth: Course Policies

- All course policies are applied on all teaching patterns (online, blended, and face-to-face Learning) as follows:

a. Punctuality.
b. Participation and interaction.
c. Attendance and exams.

- Academic integrity: (cheating and plagiarism are prohibited).

Approved by:	Name	Date	Signature
Head of Department	Dr. Ayman Amer		
Faculty Dean	Prof .Taiseer Alghanim