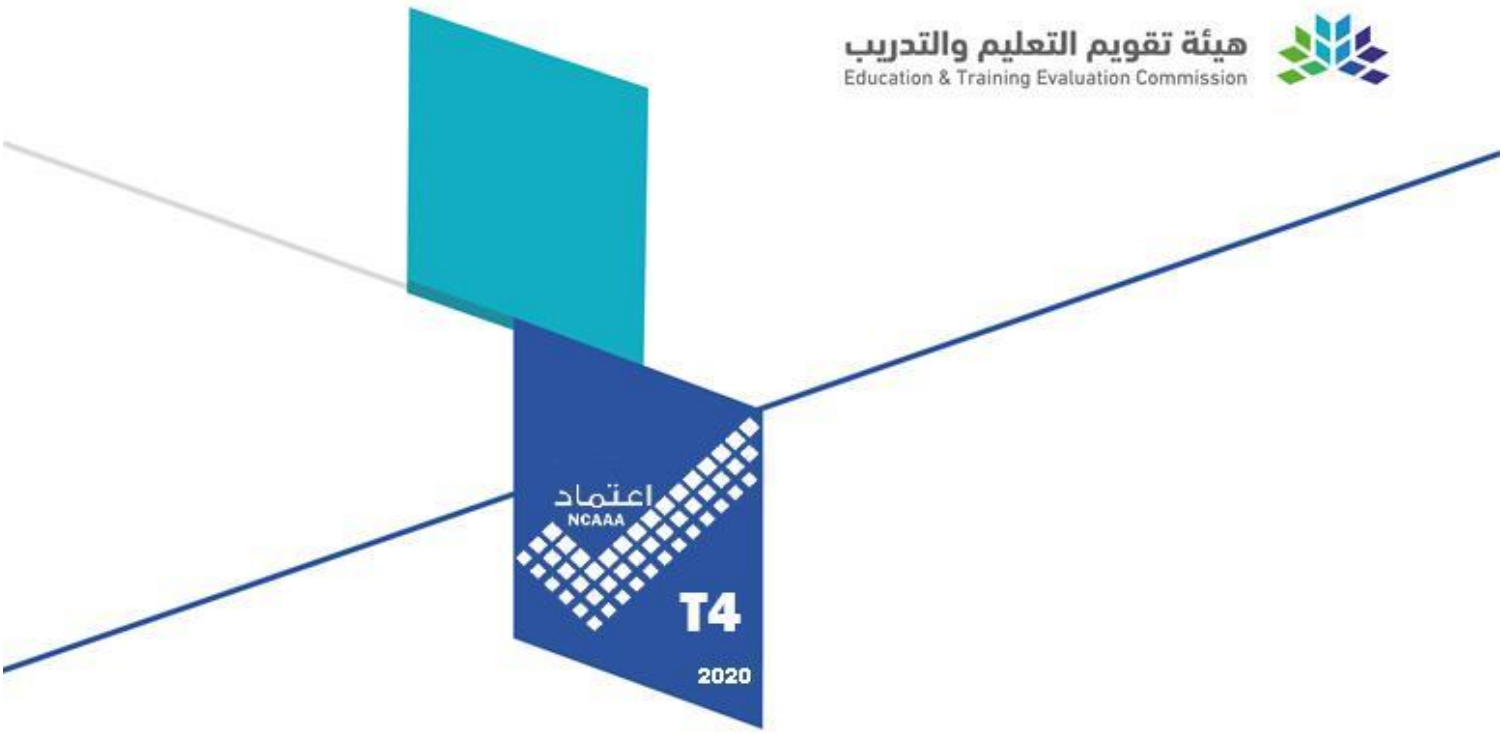
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Communication Systems
Course Code:	503311-3
Program:	Bachelor in Computer Engineering
Department:	Department of Computer Engineering
College:	College of Computers and Information Technology
Institution:	Taif University

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: 7/4
4. Pre-requisites for this course (if any)**:** 503371-3
5. Co-requisites for this course (if any)**:** None.

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	75

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides basic concepts of Analogue and Digital Communication Systems (Transmitter, Channel, and the Receiver). It includes components of analogue and digital communication systems with more emphasize on the digital communication systems. In this course students will familiarize with the design of communication systems and be able to analyze the performance of the systems.

2. Course Main Objective

1. Describe the basic building blocks of an end to end communication system
2. Describe the mathematical models of basic components of communication system
3. Evaluate the performance of communication system

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Describe the Amplitude and Frequency Modulation/Demodulation.	K1
1.2	Explain the multiplexing and channel coding techniques	K1
1.3		
1...		
2	**Skills :**	
2.1	Use basic Formatting (Sampling, quantization, encoding), and Modulation techniques	S1
2.2	Use basic demodulation and detection techniques to recover the transmitted signal	S1
2.3	Evaluate the performance of a digital communication system	S3
2...		
3	**Values:**	
3.1		
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to communication systems	3
2	Amplitude Modulation/Demodulation (DSB, SSB, VSB)	5
3	Angle Modulation/Demodulation (FM, PM)	5
4	Overview of probability and statistics	3
5	Formatting: sampling (also cover in DSP course), quantization	5
6	Base band encoding and modulation (PCM)	5
7	Base band demodulation/detection	5
8	Detection of binary signal in gaussian noise, intersymbol interference, error performance	5
9	Bandpass modulation and demodulation/detection	4
10	Multiplexing and Channel coding	5
	Lab	30
Total		75

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the Amplitude and Frequency Modulation/Demodulation.	Lecture Brainstorming Group Work Problem Solving	Written Exams Assignments Oral Test

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Explain the multiplexing and channel coding techniques	Lecture Discussion Problem Solving	Written Exams Assignments
…			
2.0	**Skills**		
2.1	Use basic Formatting (Sampling, quantization, encoding), and Modulation techniques	Lecture Discussion Problem Solving Projects	Written Exams Assignments Oral Test Project Practical Test
2.2	Use basic demodulation and detection techniques to recover the transmitted signal	Lecture Discussion Brainstorming Problem Solving Projects	Written Exams Assignments Oral Test Practical Test
2.3	Evaluate the performance of a digital communication system	Group Work Problem Solving Projects	Oral Test Project Practical Test
3.0	**Values**		
3.1			
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Lab Exam	15	15%
2	Midterm Exam	7	20%
3	Assignments	Continues	5%
4	Quizzes	Continues	10%
5	Project	Continues	10%
6	Final Exam	16	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Teaching staff provide at least 6 office hours for students to help them in the course as well as in any other academic issues.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	B. P. Lathi, Zhi Ding, Modern Digital and Analog Communication System, 4th Ed., Oxford Univ Press, 2001. B. Sklar, Digital Communications: Fundamentals and Applications, 2nd Ed., Prentice Hall, 2001.

	Communication Systems, Analog and Digital, Sanjay Sharma, S.K. Kataria & Sons Publisher, ISBN:9789250143599, 7th edition, 2017.
Essential References Materials	John G. Prokais, Digital Communications, McGrawHill, 4th Ed., 2000.
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Traditional Classrooms, Laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	White Board. Datashow, Software.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	Students	Indirect (Survey)
Effectiveness of teaching and assessment	Students	Indirect (Survey)
Extent of achievement of course learning outcomes	Faculty	Course Report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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