The University of Jordan
School of Engineering
Computer Engineering Department

Academic Year:	2025 / 2026
Semester:	Fall
Course:	0907321 Data Communications Systems 3 Credits / Dept. Obligatory
Catalog Description:	Communication System block diagram. Channel impairments: attenuation, distortion, and noise. Noise sources/characteristics, AWGN noise. Modulation and demodulation techniques. Mixers, coherent detection, and frequency conversion. Multiplexing: TDM, TDMA, FDM, and FDMA. Digital transmission: a sampling of signals, quantization, line coding, and pulse shaping. Landline Telephony, Pulse Code Modulation (PCM), PDH, and SDH standards. Basics of cellular telephony standards: GSM, 3G, and 4G. Basics of Analog and Digital TV Broadcasting Standards. AM and FM Radio standards and receivers. Basics of ADSL standards, error control and flow control at the data link layer.
Prerequisite(s):	0907322 Computer Networks
Co-requisite(s):	None
Background:	Students are assumed to have basic general knowledge of computer networks and signals and systems.
Textbooks:	• Data Communications and Networking", 5th Edition, by Behrouz Forouzan, published by, McGraw-Hill, 2012.
References:	• Data and Computer Communications", 10th Edition, by William Stallings, published by, Pearson, 202.
Course Website:	Microsoft Teams
Schedule & Duration:	16 Weeks, 45 lectures, 50 minutes each (including exams)
Student Material:	Text book, class handouts, some instructor keynotes, and access to a personal computer and the internet.
Facilities:	Classroom with whiteboard, smart board, projector, library, and computer laboratory.
Course Objectives:	• Understanding the elements of a data communication system and how data is transmitted and received in a data communication system. • Providing efficient network solution for obstacles encountered during data transmission taking into account, performance, global, environmental, and economic factors.

Course Outcomes and Relation to ABET Program Outcomes:

Upon successful completion of this course, a student should be able to:

- understand the elements of a data communication system. [**SO1**].
- understand how data is transmitted and received in a data communication system. **[SO1]**.
- understand the obstacles encountered during data transmission. [**SO1**].
- Apply error control and flow control techniques. [**SO1**]

Course Topics:

- Introduction: data communication components, network criteria, & topologies
- (Chapter 1)
- Analogue and digital signals and introduction. (Chapter 3)
- Data rate limits and transmission impairments. (Chapter 3)
- Basics of performance analysis in data communication networks. (Chapter 3)
- Digital data transmission and signal representation (Chapter 4)
- Analog Transmission: (Chapter 5)
- Bandwidth utilization (Chapter 6)
- Error detection and correction (Chapter 10)
- Data Link Control protocols (Chapter 11)

Computer Usage:

It is needed to have access to computers for viewing slides and course-related announcements posted on MS Teams.

Policies:

- Attendance is mandatory and will be recorded each class; university absence rules apply.
- All submitted work must be your own; cheating, plagiarism, unauthorized AI-generated work, or improper use of AI tools will result in academic penalties.
- Professional conduct, timely communication, and adherence to assessment schedules are expected throughout the course.

Assessment Tools & Grading:

☐ First Exam	0%	☒ Midtem Exam	30%
☒ Final Exam	50%	☒ Quizzes	20%
☐ Assignments	0%	☐ Projects	0%
☐ Other:			

Instructor(s):

- Dr. Mahmoud Khasawneh (m_khasawneh@ju.edu.jo

Section(s):

- **Section 1:** Monday and Wednesday 10:00 – 11:30
- **Section 2:** Sunday, Tuesday and Thursday 12:30 – 13:30

Student Outcomes (SO)

SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO3. An ability to communicate effectively with a range of audiences.

SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Last modified: September 30, 2025