



**Jordan University of Science and Technology**  
**Faculty of Computer & Information Technology**  
**Network Engineering And Security Department**

NES311 Data Communication

Second Semester 2020-2021

**Course Catalog**

3 Credit Hours. Analog and digital transmission, modulation and demodulation, transmission media, data encoding, synchronous and asynchronous transmission, digital carriers, error control, multiplexing, circuit and packet switching, open system standards.

**Text Book**

<b>Title</b>	Data Communications and Networking
<b>Author(s)</b>	Behrouz A. Forouzan
<b>Edition</b>	4th Edition
<b>Short Name</b>	Ref#1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	Data & Computer Communications	William Stallings	7th Edition	

**Instructor**

Name	<b>Dr. Omar Al Jarrah</b>
Office Location	-
Office Hours	Sun : 10:00 - 11:30 Mon : 10:00 - 11:30 Tue : 10:00 - 11:30 Wed : 10:00 - 11:30
Email	oyaljarrah1@just.edu.jo

**Instructor**

Name	<b>Dr. ABDALLAH ALMA'AITAH</b>
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Office Location	-
Office Hours	Sun : 11:30 - 12:30 Sun : 13:30 - 14:30 Mon : 09:30 - 10:30 Wed : 09:30 - 10:30 Wed : 13:30 - 14:30 Thu : 13:30 - 14:30
Email	ayalmaaitah@just.edu.jo

Class Schedule & Room	
Section 1:	Lecture Time: Sun, Tue : 08:30 - 10:00 Room: منصة الكترونية
Section 3:	Lecture Time: Sun, Tue : 11:30 - 13:00 Room: منصة الكترونية
Section 4:	Lecture Time: Mon, Wed : 11:30 - 13:00 Room: منصة الكترونية

Prerequisites		
Line Number	Course Name	Prerequisite Type
1712310	CPE231 Digital Logic Design	Prerequisite / Study
242601	EE260 Signal And Systems Analysis	Pre./Con.

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Overview of data communications and networking	<b>chapter 1</b> From <b>Ref#1</b>
Weeks 2, 3	Network models (TCP/IP, OSI)	<b>chapter 2</b> From <b>Ref#1</b>
Weeks 4, 5, 6	Data and signals	<b>chapter 3</b> From <b>Ref#1</b>
Weeks 7, 8, 9	Digital transmission	<b>chapter 4</b> From <b>Ref#1</b>
Week 10	Analog transmission	<b>chapter 5</b> From <b>Ref#1</b>
Week 11	Bandwidth utilization	<b>chapter 6</b> From <b>Ref#1</b>
Week 12	Transmission media	<b>chapter 7</b> From <b>Ref#1</b>
Week 13	Data transmission over telephone and cable networks	<b>chapter 9</b> From <b>Ref#1</b>
Week 14	Error detection	<b>chapter 10</b> From <b>Ref#1</b>

<b>Mapping of Course Outcomes to Program Student Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Define the roles of major components, such as sender, receiver, medium, and protocol in data communications. [1SO1]	6%	Quizzes, Final Exam
Identify the roles of standards' organizations in computer networking [1SO1]	3%	Midterm Exam
Explain different networking typologies, transmission modes, and network types [1SO1]	4%	Midterm Exam, Quizzes
Discuss the major functions of the OSI layers and the TCP/IP model. [1SO1]	5%	Midterm Exam, Quizzes
Demonstrate understanding of analog and digital signals, with respect to their frequency spectrum, and bandwidth requirements [1SO1]	18%	Midterm Exam, Quizzes
Calculate different transmission impairments, including attenuation and noise (dB). [1SO1]	6%	Midterm Exam, Quizzes
Analyze timing diagrams for different digital data encoding and modulation schemes, such as unipolar, polar (NRZ, NRZ-L, NRZ-L, RZ, Manchester and Differential Manchester), and bipolar (AMI). [1SO1, 1SO2]	13%	Midterm Exam, Quizzes, Final Exam
Differentiate between analog-to-digital (PCM), digital-to-analog (ASK, FSK, PSK, QAM), and analog-to-analog (AM, FM, PM) conversion processes. [1SO1]	12%	Quizzes, Final Exam
Use different multiplexing methods (FDM, TDM, WDM) in utilizing link bandwidth. [1SO1, 1SO2]	13%	Final Exam
Explain the principles of modems and DSL technology. [1SO1]	4%	Final Exam
Apply the principles of VRC (parity), LRC, Checksum, and CRC to detect errors in a stream of bits, and design of CRC registers. [1SO1, 1SO2]	16%	Quizzes, Final Exam

<b>Relationship to Program Student Outcomes (Out of 100%)</b>						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
79	21					

<b>Evaluation</b>	
<b>Assessment Tool</b>	<b>Weight</b>
Midterm Exam	30%
Quizzes	20%
Final Exam	50%

<b>Policy</b>	
Exams	1. May include: Definitions, True/False, Multiple-Choice, Analysis and Descriptive formats. 2. Use only your own tools: calculator, pens and ruler 3. Instructions on the first page of the exam are quite important. 4. Not abiding by the rules is a reason for dismissal from the exam.
Makeups	Makeup exam should not be given unless there is a valid excuse.
Drop Date	Last day to drop the course is before the 12th week of the current semester.
Cheating	Standard JUST policy will be applied.
Attendance	1. Excellent attendance is expected. 2. According to the JUST policy, a student will receive the grade of ZERO (35%) "failed for absence" if he misses more than 20% of the classes. 3. Attendance will be taken by calling, or through quizzes. 4. If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed.
Workload	Average work-load student should expect to spend is 8 hours/week.
Graded Exams	Graded exam papers will be returned within a week.
Participation	1. Participation in the class will positively affect your performance. 2. Disruption and side talks will possibly result in dismissal from class. 3. No eating or chewing gums are allowed in class.

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