



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

NES416 Network Programming

First Semester 2020-2021

Course Catalog

3 Credit Hours. Introduction to Network Programming, Transport Layer Protocols, TCP, UDP, and SCTP, Client-Server Model, TCP Sockets, UDP Sockets, SCTP Sockets, I/O Multiplexing, DNS and Address Conversion, Threads Programming, RPC, Raw Sockets and Datalink Access. One or more of the following Internet Application Protocols and Case Studies: TELNET, HTTP, Authd, SMTP, POP, IMAP, FTP, and Web Programming (CGI, Servlets, and XML).

Text Book

Title	Unix Network Programming: The Sockets Networking API
Author(s)	W. R. Stevens, B. Fenner, A. M. Rudoff
Edition	3rd Edition
Short Name	Ref #1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Advanced Programming in the UNIX Environment	W. R. Stevens and S. Rago	2nd Edition	

Instructor

Name	Dr. Raed Bani-Hani
Office Location	E1L3
Office Hours	Sun : 10:00 - 11:30 Mon : 11:30 - 13:30 Tue : 10:00 - 11:30 Wed : 11:30 - 12:30
Email	rbanihani@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 10:00 - 11:30 Room: منصة الكترونية

Teaching Assistant
Eng. Nuha Aljarrah(Section 1)

Prerequisites		
Line Number	Course Name	Prerequisite Type
1753120	NES312 Fundamentals Of Computer Networks	Prerequisite / Study
1752020	NES202 Introduction To Unix	Prerequisite / Study
1714730	CPE473 Operating Systems	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Introduction to networking and programming concepts	From Ref #1
Weeks 3, 4, 5	Introduction to socket programming	From Ref #1
Weeks 6, 7	TCP sockets and TCP Client/Server programming	From Ref #1
Week 8	I/O multiplexing	From Ref #1
Week 9	Socket Options	From Ref #1
Weeks 9, 10	UDP sockets and UDP Client/Server programming	From Ref #1
Week 11	Name and Address Resolution	From Ref #1
Weeks 11, 12	Threads programming	From Ref #1
Week 13	Advanced I/O functions and Non-Blocking I/O (selected sections)	From Ref #1
Week 14	Raw Sockets	From Ref #1

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the basic building blocks of applications communicating over a network [1SO1]	10%	Exam #1, Assignments, Final Exam
Develop client/server applications using TCP socket programming [1SO1, 1SO2, 1SO5]	10%	Exam #1, Assignments, Final Exam

Learn how to deal with asynchronous events such as signals and to implement their signal handlers [1SO1, 1SO2]	10%	Assignments, Final Exam
Learn various socket options and how to set and get their values [1SO1]	5%	Assignments, Final Exam
Develop client/server applications using UDP socket programming [1SO1, 1SO2, 1SO5]	10%	Assignments, Final Exam
Use the domain name service and its APIs to resolve hostnames into IP addresses [1SO1]	10%	Assignments, Final Exam
Understand the various I/O models such as blocking I/O, non-blocking I/O, and I/O Multiplexing [1SO1, 1SO2]	15%	Assignments, Final Exam
Develop both iterative and concurrent network servers and/or client using threads or processes and understand their performance implications [1SO1, 1SO2, 1SO5]	20%	Exam #1, Assignments, Final Exam
Learn advanced network programming capabilities such as raw sockets and/or datalink access [1SO1]	10%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
60.83	25.83			13.33		

Evaluation	
Assessment Tool	Weight
Exam #1	15%
Assignments	35%
Final Exam	50%

Policy	
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 the names or passing a sign-up sheet. 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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