Jordan University of Science and Technology
School of Computer and Information Technology
Department of Network Engineering and Security

NES 580 High Speed Networks
Spring 2015-2016

Course Catalog
High-speed network architectures, protocols and control algorithms. Basic architecture of packet networks and their network elements (switches, routers, bridges), and protocols used to enable transmission of packets through network. Network protocols: Ethernet, Internet, token rings, FDDI, Circuit-switched networks, ATM networks, switching, scheduling, naming, and addressing, routing, error control, flow control, traffic collection, modeling, and characterization, traffic management, connection admission control algorithms, and congestion control algorithms.

Text Book(s)		
Title	Software Defined Networks: A Comprehensive Approach	SDN: Software Defined Networks
Author(s)	Paul Goransson and Chuck Black	Thomas D. Nadeau and Ken Gray
Publisher	Morgan Kaufmann	O'Reilly Media
Year	2014	2013
Edition	1st	1st

References	
Internet Links	1. The Python Tutorial. [Web resource] Available form `https://docs.python.org/3/tutorial` 2. `http://elearning.just.edu.jo/`

Instructor	
Instructor	Dr. Ahmad T. Al-Hammouri
Office Location	N2 L0
Office Phone	7201000 Ext. 22447
Email	`hammouri@just.edu.jo`

Class Schedule and Rooms
Time: Mondays, and Wednesdays 9:45am–11:15am; Room: A2125

Office Hours
TBD

Teaching Assistant
TBD

Prerequisites	
Prerequisites by course	NES 412: Network Modeling and Simulation

Topics Covered		
Topic	Chapter in Textbook	Week(s)
Python programming language		
Issues of data center networking		
Software Defined Networking		
Network Virtualization		
Open Flow Protocol		
MPLS, VLANS, VPN		
Cloud Computing		
Case Studies		

Course Objectives This course is designed to help students	**Assessment Method**
1. Understand the problems that convectional networks suffer from in environment where high performance is required	Exams and assignments
2. Understand the current efforts that are gaining currency for addressing the problems that convectional networks suffer from in environment where high performance is required	Exams and assignments

Learning Outcomes: This course requires the student to demonstrate the following	**Related Objective(s)**
1. Describe the internal organization of a layer two switch (bridge) and a layer 3 switch (router), and describe their how they function	1
2. Describe the problems of current Internet distributed protocols and algorithms	1
3. Describe the needs of new environments, e.g., data center, and services, e.g., multimedia, in terms of network performance	1, 2
4. Describe how new network technologies, e.g., SDN and network virtualization, try to address the new needs required from network infrastructure	2

Evaluation		
Assessment Tool	**Expected Due Date**	**Weight**
Midterm Exam #1	To be Scheduled by the Department	20%
Midterm Exam #2	To be Scheduled by the Department	20%
Programming Assignments	Biweekly	20%
Presentation (tentative)	Throughout the semester	10%
Final Exam	To be Scheduled by the Registrar	30%

Policies	
Teaching and Learning Methods	• Class lectures, lecture notes, quizzes, and assignments are designed to achieve the course objectives. • Students are expected to read the material as detailed in the textbook, complete the assignments/projects on time, and to participate in class. • The course web page is the primary source of information such as class notes, assigned readings, course announcements, and HW assignments.
Makeup Exams	Makeup exam should not be given unless there is a valid excuse.

Cheating	Will not be tolerated and standard JUST policy will be applied.
Attendance	• Excellent attendance is expected. • JUST policy requires the faculty member to assign ZERO (35%) if a student misses 20% of the classes. • Attendance will be taken by calling or sign-in sheets will be circulated. • If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed.
Other classroom policies	Be considerate to others: avoid coming to class late, leaving early, and talking to other students. Please turn off your cell phone before the class starts.
Drop Date	Last day to drop the course is before the twelfth (12^{th}) week of the current semester.

Created by Dr. Ahmad Al-Hammouri **Date: 8/2/2016**