



ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)



هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution: Al Yamamah University	Date: November 15 2018
College/Department : Engineering and Architecture/ Computer Engineering	

A. Course Identification and General Information

1. Course title and code: NES 341 Computer Networks			
2. Credit hours: 3+1			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor of Engineering in Network Engineering and Security			
4. Name of faculty member responsible for the course Dr Issam Jabri			
5. Level/year at which this course is offered: 3 rd Year			
6. Pre-requisites for this course (if any): NES 212: Data Communications			
7. Co-requisites for this course (if any):			
8. Location if not on main campus: Engineering Campus			
9. Mode of Instruction (mark all that apply):			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			

B Objectives

1. What is the main purpose for this course?

This course gives comprehensive knowledge and skills about the latest Computer Networks and their applications. This subject covers the fundamental concepts of OSI/TCP/IP model and functioning of different layers.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Use of LMS (Learning Management System) that increases the use of IT for students
- Refer students to related website

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Students will learn the design, configuration and maintenance of LAN, and WAN utilizing layer 2 switches, and layer 3 routers. Ethernet technologies, including high-speed Ethernet, Metro Ethernet and ATM LAN emulation will be included. Concepts related to Layer 3, including IP address management and router operations and management along with associated Internet protocols, advanced routing technologies, BGP protocols, multi-area routing protocols, security protocols, IP multicasting protocols are covered. Students will be given an introduction to IPv6. Concepts related to Layer 4 (here the TCP and UDP protocols) will be studied in detail, Concepts related to Layer 5 including DNS and Email will also be taught.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Layer: 1: The Physical Layer: Introduction to Networks, Types/ Topologies of Networks and their applications, communication Media, Modulation, Multiplexing	2	6
Layer 2: The Data Link Layer: bridging/switching techniques, Flow control, Error Detection and Correction Schemes	2	6
Layer 3: The Network Layer: routing operations	1	3
IP protocols, address management	1	3
IP Routing, Internet access and operations	2	6
Router update protocols – RIP and OSPF	1	3
Inter-area routing – BGP protocols	1	3

Secure routing and Quality-of-service routing	1	3
IP Multicasting	1	3
IPv6 and the future of IP networking	1	3
Layer 4: The Transport Layer: TCP, UDP	1	3
Layer 5: The Application Layer: DNS, Electronic Mail, The Web, Streaming Audio and Video, Content Delivery, Virtual Private Networks	1	3
Total	15	45

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	45		30			75
	Actual	45		30			75
Credit	Planed	3		1			4
	Actual	3		1			4

3. Additional private study/learning hours expected for students per week. 6

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge After successful completion of the course students will be able to:		
1.1	Describe the knowledge of design and description of layered architectures of computer networks.	<ul style="list-style-type: none"> • Lectures • Group discussions 	<ul style="list-style-type: none"> • Written exams (quizzes, mid-



1.2	Recognize all possible algorithms present at each layer and applications of computer networks.	<ul style="list-style-type: none"> • Mini/ Group projects • Assignments/ Homework • Simulation • Lab based project 	term, and final exams) <ul style="list-style-type: none"> • Oral presentations • Group discussion • Assignments/ Homework • Lab based assignment
2.0	Cognitive Skills After successful completion of the course students will be able to:		
2.1	Explain and apply the knowledge of design of computer networks for LAN, MAN and WAN	<ul style="list-style-type: none"> • Case Studies • Projects from industry and society 	<ul style="list-style-type: none"> • Oral Presentations • Written exams
2.2	Write down different algorithms for different layers for different design requirements	<ul style="list-style-type: none"> • Assignments/ Homework • Group discussion 	
3.0	Interpersonal Skills & Responsibility After successful completion of the course students will be able to:		
3.1	Demonstrate their effective working in groups and exercise leadership when required	<ul style="list-style-type: none"> • Group Projects • Group discussion • Activity 	<ul style="list-style-type: none"> • Oral Presentations • Continuous monitoring and observing
3.2	Show responsible and professional relationships in their working environment by executing moral values		
4.0	Communication, Information Technology, Numerical After successful completion of the course students will be able to:		
4.1	Demonstrate the effective use of Information Technology both in communication and design and analysis of the design of computer networks.	<ul style="list-style-type: none"> • Group discussion • Group Projects • Assignments • Use of IT and mathematical tools 	<ul style="list-style-type: none"> • Written exams (quizzes, mid-term, and final exams) • Oral presentations • Mini/Group projects • Doing Assignments/ Homework using IT tools • Lab assignments
4.2	Show numerical analysis of all design related to computer networks.		
5.0	Psychomotor NA		
5.1			
5.2			

5. Schedule of Assessment Tasks for Students During the Semester



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Education Evaluation Commission

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Assignments/ lab work/ Projects	4, 9, 12	10%
2	Presentations/ Effective Participation	4, 7, 11, 13	10%
3	Quizzes	3, 6, 10, 13	20%
4	Midterm Exam	8	20%
5	Comprehensive Final Exam	17	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

In addition to class lectures time, teacher is supposed to display his/ her advisory hours (10 hours per week) for the students outside his/ her office in order to have individual student consultations and academic advice.

E Learning Resources

1. List Required Textbooks

- 1 Andrew S. Tanenbaum, "Computer Networks", 5th Edition, 2011, Pearson International Edition, ISBN-10: 0132126958, ISBN-13: 978-0132126953.
- 2 James F. Kurose, Keith W. Ross, "Computer Networking – A Top-Down Approach", Sixth Edition, 2012, ISBN-10: 0132856204, ISBN-13: 978-0132856201.

2. List Essential References Materials (Journals, Reports, etc.)

1. Douglas E. Comer, "Internetworking with TCP/IP Volume One", 6th Edition, 2013, ISBN-10: 013608530X, ISBN-13: 978-0136085300
2. Behrouz Forouzan, Firouz Mosharraf, "Computer Networks – A Top-Down Approach", Mcgraw Hill Higher Education, 2011, ISBN-10: 0071315152, ISBN-13: 978-0071315159.
3. Larry L. Peterson, Bruce S. Davie, "Computer Networks, A Systems Approach" Fifth Edition:(The Morgan Kaufmann Series in Networking) (Mar 25, 2011)
4. William Stallings, "Data and Computer Communications", 9th Edition, 2010
5. Behrouz Forouzan, "TCP/IP Protocol Suite", McGraaw-Hill, 2009.

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

- Internet RFC Standards: <http://www.rfc-editor.org/>
- Cisco CCNA Review Guides
<http://www.comptia.org/home.aspx> (IT industry for knowledge and Certifications)

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

Packet Tracer, a computer-based program is used to develop cognitive skills in the students.
Wireshark, for analyzing network traffic.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) <ul style="list-style-type: none"> ✓ Classrooms ✓ Computer Laboratory ✓ Network Laboratory
2. Technology resources (AV, data show, Smart Board, software, etc.) <ul style="list-style-type: none"> ✓ data show
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) <ul style="list-style-type: none"> ✓ Network Laboratory with Catalyst Switches and Routers

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching During the course, students receive a feedback forms that covers all aspects relating to their learning experience. These forms will then be collected and analyzed by the Academic Advising and Counseling Department. Next, the Academic Advising and Counseling Department will conduct a meeting with the concerned faculty to discuss the students' feedback outcomes.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department Peer review visits are normally conducted among faculties wherever possible during academic year. During the lecture time Chair (Head)/ Dean of the department visits the classroom. At the end of each visit, faculties are usually set together to discuss related issues.
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> ✓ Feedbacks from students using different types of survey including Student Experience Survey (SES), Program Evaluation Survey (PES), and Alumni Survey (AS) are shown and discussed with faculty members to improve the teaching. ✓ Specialized workshops and seminars are conducted throughout academic year to address specific teaching strategies and improvements.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) Peer review and discussion with course coordinator. There should be a strong liaison with teacher from some external university/institute in order to exchange ideas related to marking/ evaluating quizzes and assignments.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.



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At the end of each semester, Curriculum committee conducts a meeting with all faculty members in which surveys filled by the students and other feedbacks from faculty members are discussed. Effectiveness of the courses, mistakes done and weaknesses are discussed. These points are made basis for the planning for improvements for next semester/ year.

Name of Course Instructor: _____ Dr Issam Jabri _____

Signature: _____ Date Specification Completed: _____

Program Coordinator: _____ Dr Ibrahim Aloqili _____

Signature: _____ Date Received: _____