



# Course Specification

— (Bachelor)

**Course Title:** Internetworking and Transport Protocols

**Course Code:** CEN 1410

**Program:** Bachelor in Computer Engineering

**Department:** Computer Engineering

**College:** Faculty of Computer and Information Technology

**Institution:** University of Tabuk

**Version:** 1.0

**Last Revision Date:** 27 July 2022



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: ( 3 )

#### 2. Course type

- A.  University  College  Department  Track  Others
- B.  Required  Elective

3. Level/year at which this course is offered: (9/5)

#### 4. Course general Description:

This course provides a comprehensive overview of Internet architecture, protocols and technologies, as well as how different networks are integrated within Internet. It defines fundamental concepts of TCP/IP architecture and protocols. Topics covered include: TCP/IP Protocol Suite, PV 4 Addresses and Protocol and IPV6 Addresses and Protocol, Address Resolution Protocol (ARP), Internet Control Message Protocol Version 4 (ICMPv4), Mobile IP, unicast Routing Protocols (RIP, OSPF and BGP), User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Stream Control Transmission Protocol (SCTP), Host Configuration: DHCP, Domain Name System (DNS), Stream Control Transmission Protocol (SCTP), Remote Login: TELNET and SSH, File Transfer: FTP and TFTP, world Wide Web and HTTP, Electronic Mail: SMTP, POP, IMAP and MIME, Multimedia protocols.

#### 5. Pre-requirements for this course (if any):

CEN 1405

#### 6. Co-requisites for this course (if any):

N/A

#### 7. Course Main Objective(s):

- Identify protocols and standards in the Internet
- Describe the TCP/IP protocol suite.
- Explain forwarding, routing and delivery of IP Packets
- Describe the services at the IP (Internet Protocol) layer
- Describe the auxiliary protocols that serves the IP layer
- Explain error reporting and query mechanism in the Internet
- Identify routing protocols in the Internet.
- Describe process-to-process communication (UDP, TCP, and SCTP).
- Explain the rationale for changes in the next generation of Internet protocols

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	-	-



No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>	-	-
4	Distance learning	-	-

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
<b>Total</b>		<b>45</b>

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Define fundamental concepts of TCP/IP architecture and protocols	K1	Lectures, textbooks, provided handouts, references.	Exams, quizzes, assignments
1.2	Describe the most important TCP/IP protocols: Multicast IP, Mobil IP, UDP, TCP, DNS, RTP, RTCP, ARP, ICMP.	K1		
1.3	Describe the applications of TCP/IP to the Internet	K3		
1.4	Understand different types of routing protocols: RIP, OSPF, BGP	K5		
1.5	Understand different internet protocols: Stream Control	K4		



Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	Transmission Protocol (SCTP), TELNET, SSH, Electronic Mail protocols, management protocols, multimedia protocols			
<b>2.0</b>	<b>Skills</b>			
2.1	Design and apply solutions for TCP/IP Internetworking and protocols	S1, S2	Lectures, textbooks, provided handouts, references.	Exams, quizzes, assignments.
2.2	Analyze and evaluate different network protocols by using analytical tool	S3, S4		
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	The ability to demonstrate work within a team	V2		
3.2				

### C. Course Content

No	List of Topics	Contact Hours
1.	TCP/IP Protocol Suite	3
2.	IPV 4 Addresses and Protocol	3
3.	IPV6 Addresses and Protocol	3
4.	Address Resolution Protocol (ARP)	3
5.	Internet Control Message Protocol Version 4 (ICMPv4)	3
6.	Mobile IP	3
7.	Unicast Routing Protocols (RIP)	3
8.	Unicast Routing Protocols (OSPF and BGP)	3
9.	User Datagram Protocol (UDP)	3
10.	Transmission Control Protocol (TCP) I	3
11.	Transmission Control Protocol (TCP) II	3
12.	Stream Control Transmission Protocol (SCTP)	3
13.	Host Configuration: DHCP Domain Name System (DNS)	3
14.	Remote Login: TELNET and SSH File Transfer:	3
15.	FTP and TFTP World Wide Web and HTTP	3
<b>Total</b>		<b>45</b>



## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Two Assignments	5,14	10%
2.	Two Quizzes	4,9	10%
3.	Two Midterm Exam	7,12	40%
4.	Final Exam	16	40%
5.			

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

<b>Essential References</b>	TCP/IP Protocol Suite, Forouzan, McGraw-Hill Education, ISBN 007060004X, 9780070600041
<b>Supportive References</b>	<ul style="list-style-type: none"> <li>▪ Data and Computer Communications, W Stallings, Prentice Hall, ISBN: 0-02-415425-3 .</li> <li>▪ Data Communications and Networking, Behrouz A. Forouzan, McGraw-Hill Higher Education, ISBN: 0072967757.</li> </ul>
<b>Electronic Materials</b>	
<b>Other Learning Materials</b>	-

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<b>Classroom</b>
<b>Technology equipment</b> (projector, smart board, software)	<b>Data show</b>
<b>Other equipment</b> (depending on the nature of the specialty)	<b>TBA</b>



## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching	Faculty, Program Leaders, and Advisory Board	Both Direct and Indirect
	Students	Indirect
Effectiveness of Students Assessment	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Both Direct and Indirect
Quality of Learning Resources	Faculty, Students, and Advisory Board	Indirect
The Extent to which CLOs have been Achieved	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Direct (as in section B) and Indirect/Surveys
	Students	Indirect
Other	-	-

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	
<b>REFERENCE NO.</b>	
<b>DATE</b>	

