

# COURSE SYLLABUS

## Net 240: Advanced TCP/IP

### Course Description

This course provides students with an advanced understanding of the TCP/IP Protocol suite. This class offers in-depth coverage of all the relevant models, protocols, services and standards that govern TCP/IP. Students will discuss and perform hands on projects that provide firsthand experience in setting up and configuring the various TCP/IP services. Students will learn IP addressing, subnetting, supernetting and CIDR notation.

### General Course Information

Number of Units/Weeks	4/10
#Hours Lecture/#Hours Homework	40/0/80
Prerequisite(s)	None
Co-requisite(s)	None
Course Developer(s)	Robert Scott
Date Approved / Last Review	April 2015/ March 2018

### Learning Outcomes

Upon completion of the course, students will be able to:

- Identify protocols and services built into IPv4 and IPv6.
- Identify and implement IPv4 addressing, subnetting, supernetting and CIDR notation.
- Identify and implement IPv6 Addressing and Subnetting.
- Identify the Packet structure for IPv4.
- Identify the Packet structure for IPv6.
- Identify the TCP/IP layers for IPv4 and IPv6.
- Identify the functions performed at each layer.
- Capture and decipher IPv4 and IPv6 packets using Wireshark.
- Troubleshoot TCP/IP services and network problems.

## **Instruction Methods Employed in this Course**

A number of instructional/learning methods are employed in this course, including:

- Lecture and reading assignments
- Hands-on exercises and labs
- Team environment, group discussions
- Build on prior knowledge and experience of students to enhance richness of class activities

## Table for Assignments

### Lecture

Considered Lecture Hours

### Classroom Discussion

Considered Lecture Hours

### In Class Critique

Considered Lecture Hours

### Delivering Oral Presentations

Considered Lecture Hours

### In Class (IC) Exercises

Considered Lecture Hours

### Reading

Considered Homework, work done outside of class

### WebClass lesson (non-online courses)

Considered Homework, work done outside of class

### Quiz, Midterm or Final

Considered Lecture Hours

## Information Resources for this Course

### Textbook

Chappel, Laura, Tittel, Ed Guide to TCP/IP Fourth Edition, Thompson Course Technology 2013 ISBN-13:978-1-133-01986-2

### Web Site Readings

The TCP/IP Guide

<http://www.tcpipguide.com>

Protocols.com

<http://www.protocols.com/pbook/tcpip1.htm>

T. Socolofsky RFC 1180 TCP/IP Tutorial

<http://tools.ietf.org/html/rfc1180>

TCP/IP Tutorial and Technical Overview, IBM Redbook

<http://www.redbooks.ibm.com/redbooks/pdfs/gg243376.pdf>

IPv6 Tutorial

<http://archive.icann.org/en/meetings/saopaulo/presentation-ipv6-tutorial-basics-3dec06.pdf>

IPv6 Tutorials Internet Society

<http://www.internetsociety.org/deploy360/ipv6/?gclid=CKTp79PvjMQCFZeVfgod9ilAig>

Week 1						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 1A	Ch. 1 Introducing TCP/IP OSI Model & TCP/IP Model Ch. 3 Basic IP Packet Structure Headers and Payloads	3				
HW 1A	Read Chapter 1, 2, & 3 Pages 1 - 108 (108 pgs. Evaluated by Quiz 1 Week 3			11		Quiz 1 Week 3
HW 1B	Chapter 1, 2, & 3 (75 Questions)			5		Week 2
HW 1C	Assign 10 Page Paper on Securing IP networks			5		Week 9
ICA 1A	Project 1.1 - 1.7 pg. 44		1		20	
Total		3	1	21	20	

Week 2						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 2A	Ch. 2 IP Addressing IPv4 & IPv6	3				
HW 2A	Read Ch. 4 Data Link and Network Layers Pgs. 57 - 93 (44 pgs.) Evaluated by Quiz 1 Week 3			4.4		Quiz 1 Week 3
HW 2B	Ch. 4 (25 questions)					Week 3
HW 2C	Ch. 1, 2 & 3 Questions due				30	
HW 2D	Assign Subnetting Package Evaluated by Quiz 2 Week 4				35	Week 4
ICA2	Project 2.1 - 2.7 pg. 101 Project 3.1 - 3.3 pg. 149		1		40	
Total		3	1	4.4	105	

Week 3						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 3A	Ch. 4 Data Link and Network Layer Protocols	2.5				
HW 3A	Read Ch. 5 & 6 Pgs. 253 – 370 Evaluated by Quiz 2 Week 4			12		Quiz 2 Week 4
HW 3B	Ch. 5 & 6 (50 quest)			4		Week 4
HW 3C	Ch. 4 questions due				10	
ICA 3A	Quiz 1 IP Headers and Question		.5		35	
ICA 3B	Project 4.1 - 4.4 pg. 245		1		20	
Total		2.5	1.5	16	65	

Week 4						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 4A	Ch. 5 Internet Control Message Protocol IPv4 Ch. 6 Neighbor Discovery in IPv6	2.0				
HW 4A	Read Ch. 7 pg. 371 – 438 Evaluated by Quiz 3 Week 6			7		Quiz 3 Week 6
HW 4B	R.Q. Ch. 7 (25 Quest)			2		Week 5
HW 4C	Ch. 5 & 6 quest. due				20	
ICA 4A	Quiz 2 Subnetting & Questions		.5		30	
ICA 4C	Project 5.1 - 5.4 pg. 315 Project 6.1 - 6.4 pg. 364		1		40	
Total		2.0	2.0	9	90	

Week 5						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
Midterm Exam	Midterm Exam Ch. 1 -6	1			160	
LEC 5A	CH. 7 Services Address Auto configuration	2				
HW 5A	Read Ch. 8 pgs. 441 - 512 Evaluated by Quiz 3 Week 6			8		Quiz 3 Week 6
HW 5B	Ch. 8 (25 quest)			2		Week 6
HW 5C	Turn in Ch. 7 questions				10	
ICA 5A	Project 7.1 – 7.4 pg. 435		1		20	
Total		3	1	10	190	

Week 6						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 6A	Ch. 8 Services Name Resolution	2.5				
HW 6A	Read Ch. 9 & 10 pgs. 513 – 613 Evaluated by Quiz 4 Week 7			10		Quiz 4 Week 7
HW 6B	Ch. 9 & 10 (50 Questions)			4		Week 7
HW 6C	Turn in Ch. 8 Questions				10	
HW 6D	Assign VLSM Package Evaluated by Quiz 5 Week 9				50	Quiz 5 Week 9
ICA 6A	Quiz 3 Ipv6 Header & Questions		.5		20	
ICA 6B	Project 8.1 – 8.6 pg. 504		1		20	
Total		3	1.5	14	100	

Week 7						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 7A	Ch. 9 Transport Layer Protocols Ch. 10 Transitioning from Ipv4 to IPv6	3				
HW 7A	Read Ch. 11 pg. 615 – 658 Evaluated by Quiz 5 Week 9			5		Quiz 5 Week 9
HW 7B	Ch. 11 (25 questions)			2		Week 8
HW7c	Turn in Ch. 9 & 10 questions				20	
ICA 7A	Quiz 4 Questions				10	
ICA 7B	Project 9.1 – 9.3 pg. 557 Project 10.1 – 10.3 pg. 609		1		40	
Total		3	1	7	60	

Week 8						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 8A	Ch. 11 Deploying Ipv6	3				
HW 8A	Read Ch. 12 pgs. 659 – 696 Evaluated by Quiz 5 Week 9			4		Quiz 5 Week 9
HW 8B	Ch. 12 (25 questions)			2		
HW 8C	Turn in Ch. 11 questions				10	
ICA 8A	Project 11.1 – 11.2 pg. 653		1		20	
Total		3	1	6	30	

Week 9						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 9A	Ch. 12 Securing TCP/IP Environment	2				
HW 9A	Turn in Ch. 12 questions				20	
HW 9B	Turn in Paper Securing IP Network				90	
ICA 9B	Quiz 5 VLSM & Questions		.5		30	
ICA 9C	Project 12.1 – 12.4 pg. 693		1		20	
Total		2	2		160	

Week 10						
Type	Topic/Description	LEC Hours	ICA Hours	HW Hours	Point Value	Due
LEC 10A	Review	2				
Final Exam	Chapter 7 - 12		2		170	
Total		2	2		170	

## Your Grades for this Course

Your final grade for this course will be based on an assessment by the Instructor of your performance on a number of course activities, which, may include objective tests, classroom exerciser, laboratory demonstrations, project papers, or other types of activities. The chart below indicates in what activities you will engage, how many possible points can be earned for each activity, and the percentage of you final grade that will be accounted for by each activity.

## Table/Point Breakdown

Week	Assignment	Points	Percentage
1	Project 1.1 - 1.7	20	2
2	Ch. 1, 2 & 3 Questions	30	3
2	Subnetting Package	35	3.5
2	Project 2.1 - 2.7 pg. 101 Project 3.1 - 3.3 pg. 149	40	4
3	Chapter 4 questions	10	1
3	Quiz 1 IP Headers & Questions	35	3.5
3	Project 4.1 - 4.4	20	2
4	Chapter 5 & 6 questions	20	2
4	Quiz 2 Subnetting & Questions	30	3
4	Project 5.1 - 5.4 Project 6.1 - 6.4	40	4
5	Midterm Exam	160	16
5	Chapter 7 questions	10	1
5	Project 7.1 – 7.4	20	2
6	Chapter 8 questions	10	1
6	VLSM Package	50	5
6	Quiz 3 Ipv6 Headers	20	2
6	Project 8.1 – 8.6	20	2
7	Chapter 9 & 10 questions	20	2
7	Quiz 4 Questions	10	1
7	Project 9.1 – 9.3 Project 10.1 – 10.3	40	4
8	Chapter 11 questions	10	1
8	Project 11.1 – 11.2	20	2
9	Quiz 5 VLSM & Questions	30	3
9	Chapter 12 questions	20	2
9	Security Paper	90	9
9	Project 12.1 – 12.4	20	2
10	Final Exam	170	17
Total		1000	100



Students in this course should be graded following Coleman University assessment practices and policies. A point system is used in the University to indicate student performance on various required activities or projects. For this course, it is recommended that points be distributed as follows:

Pecent	Letter Grade	Grade Points
940-1000	A	4
900-930	A-	3.67
870-890	B+	3.33
840-860	B	3
800-830	B-	2.67
770-790	C+	2.33
740-760	C	2
700-730	C-	1.67
690-670	D+	1.33
640-660	D	1
600-630	D-	0.67
N/A	INC	0
N/A	W	0
N/A	CR	0
590 or below	F	0
N/A	PASS	0

## Requirements

**Assignments:** All assignments (including projects, lab work, quizzes and exams) must be completed as scheduled. The following will apply to late assignments

- 1-24 hours after due date = 20% off point value
- 25-48 hours after due date = 60% off point value
- 49+ hours after due date = No points given

If an assignment equals less than 5 points, no points will be given for late work. If there are extenuating circumstances, the student must submit a written explanation to the department Senior Instructor. Upon evaluation, points will be given according to the Senior Instructor's discretion.

## **Attendance:**

Classes begin and end as indicated in the published schedule. It is required that students be present at the beginning of each class session and stay until class is dismissed, including lab periods.

Excessive tardiness, leaving early and/or absences (from either lecture or lab sessions) are causes for dismissal from the course. A student that arrives in class beyond 30 minutes late may be considered absent. A student that leaves over 30 minutes before the end of class may also be considered absent. Excused absences will be determined by the instructors and approved by the Dean of Academics & Director of Student Services. Students may be removed from the course(s) based on the following absence guidelines:

- 4 Unit Course – Allowed 2 absences per 10-week MOD (3<sup>rd</sup> absence may be excused by DOA & DOSS)
- 5 Unit Course – Allowed 2 absences per 5-week MOD (3<sup>rd</sup> absence may be excused by DOA & DOSS)
- 8 Unit Course – Allowed 5 absences per 10-week MOD (6<sup>th</sup> absence may be excused by DOA & DOSS)

**Conduct:** Students are expected to conduct themselves in a professional manner while on campus. Rules of conduct are outlined in the University Catalog and students are required to adhere to such policies. Students who are in violation of the Student Code of Conduct Policy can be suspended.

## **Coleman University Policy on Academic Dishonesty**

Academic dishonesty is cause for dismissal from Coleman University. Presenting another person's ideas, methods, course work, or test answers with the intention that they be taken as one's own is theft of a special kind. It defrauds the originator of the work, the institution, its graduates, its students, and its future students.

The student has full responsibility for the authenticity of all academic work and examinations submitted. A student who appears to have violated this policy must submit to a hearing with the reporting instructor and the associate dean. If it is determined that a violation occurred, the matter will be referred to an Officer of the University with recommendations for an appropriate penalty. The student may be dismissed, suspended, or given another penalty.

Coleman University employs the plagiarism software known as Turnitin. Students are expected to use this tool in an appropriate manner with the sole purpose to support their own academic endeavors at Coleman University. Turnitin account information cannot be shared with anyone. Contact your instructor if you have any questions about plagiarism related issues.

## **Academic Accommodation/Adjustment Policy:**

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Coleman University offers accommodations to students with documented physical, psychological, and/or cognitive disabilities. Coleman University will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to offer equal educational opportunities to qualified disabled individuals.

To qualify for an academic accommodation under ADA, the student must provide adequate documentation of a disability. Students seeking academic accommodations should contact the campus ADA coordinator, Ariana Marron, at 858-966-3953 or via email at [ada@coleman.edu](mailto:ada@coleman.edu). The ADA Coordinator at the beginning of every term to determine the appropriate academic accommodations. Failing to meet with the ADA Coordinator at the beginning of every term may impact the availability of accommodations.

After the academic accommodations have been determined, the students' instructors will be notified by the ADA Coordinator. If any problems or concerns regarding the provision of accommodations occur, the student must inform the ADA Coordinator. If the student feels accommodation is not being made appropriately, the student may follow the published Student Grievance Procedures.