

## **CST230 Networking Fundamentals**

### **(3 credit hours)**

### **Course Syllabus**

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### **Course Description**

This course provides an overview of network hardware, operating systems, and applications with a focus on design, implementation, and management of the network environment inside an organization.

### **Course Learning Outcomes**

By the end of this course, you will be able to:

1. Describe the hardware, software and services that comprise an enterprise network to integrate to form a network solution
2. Explain key networking protocols in relationship to conceptual models such as the OSI and TCP/IP framework
3. Design a network to meet specific performance requirements
4. Compare and contrast network terminology and protocols

### **Prerequisites/Corequisites**

CST155 and MAT181

### **Required Textbook(s) and Resources**

A digital version of your book is included automatically as part of your course fees. You can access your book through the Cengage MindTap link.

West, J., Dean, T., & Andrews, J. (2019). Network+ guide to networks (8th Ed.). Cengage. ISBN: 9781337569330.

Be sure to also review the weekly **Explore** sections for additional library or web resources. For access to databases, research help, and writing tips, visit the [Tiffin University Library](#). You might consider registering for one of the library's many webinars on library research, source

evaluation, copyright, and other topics, at the [Library Events - Upcoming Events](#) web page. For further assistance email a librarian, at: [library@tiffin.edu](mailto:library@tiffin.edu).

## Time Commitment

Effective time management is possibly the single most critical element to your academic success. To do well in this online class you should plan your time wisely to maximize your learning through the completion of readings, discussions, and assignments. Because of our accelerated, seven-week term, TU online courses are designed with the expectation that you dedicate a little over **six (6)** hours per credit hour to course activities and preparation **each week**. For example, for successful completion of a three-credit, seven-week online course you should reserve roughly **twenty (20) hours per week**.

To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates:

1. All times assume Eastern Time (GMT-4).
2. Weeks begin at 12:00 a.m. ET on Monday and end at 11:55 p.m. ET on Sunday.
3. Unless otherwise noted, initial assignments or discussion posts are due by **11:55 p.m. ET on Wednesdays**.
4. Additional assignments or follow-up discussion posts are due by **11:55 p.m. ET on Saturdays, and**
5. Major assignments and reflections are typically due by **11:55 p.m. ET on Sundays**.

## Learning Activities

Assessment for CST230 relies on a large variety of activities. Each week you will be graded on your efforts in forum discussions, hands-on virtual machine labs or simulations, and other assignments, to include two papers (in weeks 1 and 6) and a culminating networking project in Week 7 using Wireshark, open source software that allows you to perform offline or real-time network analysis.

## Grading

The chart below identifies the individual contributions from each type of activity, per week.

## Grading Plan

| Activity               | Week 1     | Week 2     | Week 3     | Week 4     | Week 5     | Week 6     | Week 7     | Total       |
|------------------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Discussions            | --         | 30         | 30         | 30         | 30         | 30         | 30         | <b>180</b>  |
| Lab Simulations        | 30         | 30         | 60         | --         | --         | --         | --         | <b>120</b>  |
| Virtual Machine Labs   | 65         | 120        | --         | 120        | 40         | 40         | 40         | <b>425</b>  |
| OSI Research Paper     | 60         | --         | --         | ---        | -          | --         | --         | <b>60</b>   |
| Unit Quizzes           | --         | --         | --         | --         | 30         | --         | --         | <b>30</b>   |
| Independent Labs       | --         | --         | 40         | 35         | --         | --         | --         | <b>75</b>   |
| Network Security Paper | --         | --         | --         | --         | --         | 60         | --         | <b>60</b>   |
| Wireshark Exercise     | --         | --         | --         | --         | --         | --         | 50         | <b>50</b>   |
| <b>Total</b>           | <b>155</b> | <b>180</b> | <b>130</b> | <b>185</b> | <b>100</b> | <b>130</b> | <b>120</b> | <b>1000</b> |

## Grading Scale

| Grade | Percentage |
|-------|------------|
| A     | 90-100%    |
| B     | 80-89%     |
| C     | 70-79%     |
| D     | 60-69%     |
| F     | < 60%      |

Please see the [Academic Bulletin](#) for grade appeal information.

## Course Schedule and Weekly Checklist

| Topic  | Learning Activities (Due by 11:55 p.m. ET on day designated)   |
|--|--|
| Start Here                                       | <input type="checkbox"/> MON: Activity 1.1: Driving Force (introductory forum)   |
| Week 1:<br>Introduction to Real World Networking | <input type="checkbox"/> WED: Optional Responses to Activity 1.1<br><input type="checkbox"/> WED: Activity 1.2 (Lab): Create a VM and Install an OS<br><input type="checkbox"/> SAT: Activity 1.3 (Lab): Introduction to the OSI Model<br><input type="checkbox"/> SAT: Activity 1.4 (Lab): Network Management (Diagrams, Symbols and Documentation)<br><input type="checkbox"/> SUN: Activity 1.5: Research Paper |
| Week 2:<br>Routing and Addressing                | <input type="checkbox"/> WED: Activity 2.1 (Forum): Routers, Switches, Oh My!<br><input type="checkbox"/> SAT: Responses to Activity 2.1<br><input type="checkbox"/> SAT: Activity 2.2 (Lab): Analyze and Resolve IP Address Duplication<br><input type="checkbox"/> SUN: Activity 2.3 (Lab): Network Services and Protocols   |
| Week 3:<br>Physical and Wireless Media           | <input type="checkbox"/> WED: Activity 3.1 (Forum): What Cable Should I Use?<br><input type="checkbox"/> SAT: Responses to Activity 3.1<br><input type="checkbox"/> SAT: Activity 3.2 (Lab): Network Media<br><input type="checkbox"/> SUN: Activity 3.3 (Lab): Public Network Analysis  |
| Week 4:<br>Virtualization and Cloud Computing    | <input type="checkbox"/> WED: Activity 4.1 (Forum): The Cloud. . . No it isn't in the Sky<br><input type="checkbox"/> SAT: Responses to Activity 4.1<br><input type="checkbox"/> SAT: Activity 4.2: Chapter 7 Labs<br><input type="checkbox"/> SUN: Activity 4.3 (Lab): Compare Google and Amazon Cloud Offerings  |
| Week 5:<br>Subnetting and the world of VLANS     | <input type="checkbox"/> WED: Activity 5.1 (Forum): IPv4 vs IPv6<br><input type="checkbox"/> SAT: Responses to Activity 5.1<br><input type="checkbox"/> SAT: Activity 5.2 (Lab): Configure VLANs on a Linksys Switch   |

| Topic                                   | Learning Activities (Due by 11:55 p.m. ET on day designated)  |
|---|---|
|   | <input type="checkbox"/> SUN: Activity 5.3: Chapter 8 Subnetting Quiz   |
| Week 6:<br>Network Risk and Security    | <input type="checkbox"/> WED: Activity 6.1 (Forum): Firewalls<br><input type="checkbox"/> SAT: Responses to Activity 6.1<br><input type="checkbox"/> SAT: Activity 6.2 (Lab): Common Network Vulnerabilities<br><input type="checkbox"/> SUN: Activity 6.3: Network Security Paper                        |
| Week 7:<br>Network Performance and WANs | <input type="checkbox"/> WED: Activity 7.1 (Forum): Wide Area Networks<br><input type="checkbox"/> SAT: Responses to Activity 7.1<br><input type="checkbox"/> SAT: Activity 7.2 (Lab): Detecting System Bottlenecks and Log Management<br><input type="checkbox"/> SUN: Activity 7.3: Wireshark Exercises |

## Tips for Success

Online learning requires self-discipline and self-direction. As seekers of the truth, we should be willing to challenge one another's academic work in a spirit of respectful comradery. Your course is a place for you to grow as you benefit from the expertise, experience, and diverse perspectives of your instructor and peers. Constructive feedback will challenge you to stretch your own thinking, thereby expanding your knowledge and understanding.

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements are arranged chronologically. To complete a week, simply work your way "down the page" through all of the course materials and activities.

## Your Instructor Will Expect You to:

- Thoroughly review orientation materials (Start Here) within the first 48 hours of the term.
- Monitor your TU email account **daily** for important updates and announcements.
- Take ownership of your learning experience and act in a proactive, self-directed manner. That means:
  - Fully participate in all learning activities.
  - Complete assignments as described in rubrics or other instructions.
  - Submit all work on time and in the specified format (e.g. APA format for citations).
  - Utilize and incorporate instructor provided feedback to improve your work.
  - Ask questions so you can better understand course material or assignments.

- Use the highest standards of intellectual honesty and integrity. For more information, see the TU Library guide: [Digital Literacy: Netiquette and Internet Safety](#).
- Treat others respectfully and demonstrate "netiquette" (online politeness and respectfulness) at all times. TU celebrates cultural uniqueness and expects all students to be considerate and thoughtful throughout their learning experiences.

### **You Should Expect Your Instructors to:**

- Post an introductory announcement/email at the beginning of each week to provide updates and help you prepare for the week's activities.
- Maintain an active and engaged presence in all course activities and throughout the course.
- Respond to your emailed questions within 48 hours, if not sooner.
- Clearly communicate any absences or expected non-participation due to extenuating circumstances. For example, "I will be traveling to attend a funeral this week and may not be able to respond to questions or participate in forums for a couple of days."
- When grading your work:
  - clearly indicate their grading approach (what they like to see in submitted work as well as what types of errors they tend to penalize more harshly),
  - thoroughly review and evaluate your submissions in a timely manner (in less than 5 days for most assignments), and
  - provide constructive feedback that indicates the strengths and weaknesses of your work and provides suggestions on how you can improve your performance on future assignments.
- Advocate for your success as a learner and help guide you toward successful completion of the course activities and most importantly, attainment of the course learning outcomes.

### **Accommodations (Disability Services)**

The Office of Disability Services supports the institutional commitment to diversity by providing educational opportunities for qualified individuals with disabilities through accessible programs and services in compliance with Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act (ADA) of 1990. If you need reasonable accommodations due to a documented disability, contact the Office for Equity, Access, & Opportunity via email at [disabilityservices@tiffin.edu](mailto:disabilityservices@tiffin.edu) or by calling 419-448-3021.

## Technical Support

For Moodle support, either email [moodlesupport@tiffin.edu](mailto:moodlesupport@tiffin.edu) or call the 24/7 Technical Support Call Center at 855-664-1200 (3430, Option 2, from on-campus). For non-Moodle support, contact the Tiffin University ITS helpdesk at the number above or submit a [support ticket](#).

## Veterans

The Veteran and Military Resource Center assists veterans, active Military, and spouses of current service members in utilizing their education benefits. VMRC provides information regarding benefit processes and procedures, as well as support in navigating the transition from military to academic life by facilitating connections with the appropriate support services on campus. More information can be found on the Veteran and Military Resource Center website, at <http://www.tiffin.edu/va>.

## Additional Support

If you need to consult an academic advisor refer to TU's [Meet the Team](#) page. For information about TU's peer tutoring program see the Murphy Center's [Tutoring Policies and Procedures](#) page.

## Comments or Concerns

TU's online programs are designed to be student *driven*: to empower you with a voice and stake in your learning. Our courses feature multiple and varied ways that you can share feedback, and we invite you to become an active voice and help drive our improvement efforts. In addition to providing in-course feedback, we encourage you to submit questions or comments directly to the online team at [online@tiffin.edu](mailto:online@tiffin.edu).