

TRINE

UNIVERSITY

Course Syllabus

Course Title: Computing Infrastructure Basics

Term and Year:

Course and Section Number: CSIT 123

Time and Place: Online

Number of Credit Hours: 3

Office Location/Hours:

Instructor:

Office Phone:

Email:

Course Description:

Fundamentals of supporting an integrated technical architecture. Topics include operating systems, local network, and network infrastructure. Mobile devices, printers, virtualization, and cloud computing are also covered. Students will learn to troubleshoot various components of the IT infrastructure and become familiar with critical IT support tasks. This course maps fully to CompTIA's latest A+ 220-1101 (Core 1) Exam objectives.

Prerequisites: None

Learning Outcomes: Upon completion of this course, the student should be able to:

1. Explain the relationship between application software, system software, and hardware.
2. Identify strategies for troubleshooting software, hardware, and equipment.
3. Describe issues that impact network functionality.
4. Know basic concepts of cloud computing and virtualization.

Required Text: This course utilizes OER (Open Educational Resources) materials at no cost to learners. All required reading is available in the Trine Online Library.

References:

1. Docter, Quentin, and Jon Buhagiar. *Comptia® a ® Complete Study Guide : Exam Core 2201101 and Exam Core 220-1102*. Fourth edition., Fourth ed., Sybex, a Wiley Brand, 2019.
<https://trine.on.worldcat.org/oclc/1097183646>. Accessed 5 Sept. 2022.
2. Portnoy, Matthew. *Virtualization Essentials*, John Wiley & Sons, Incorporated, 2016.
ProQuest Ebook Central,
<https://ebookcentral.proquest.com/lib/trineebooks/detail.action?docID=4644086>.

Other Materials:

Course Requirements:

Attendance/Participation: All students are expected to log in to their courses regularly throughout the week to receive instruction, materials, and updates from the instructor. It is your responsibility to check in and submit your assignments, complete your discussion board postings, and finish quizzes and exams by the due dates.

If you do not participate in the course, you will be counted absent. Simply logging in is not enough; you must submit/complete an assignment, post to a discussion board, or other similar assignment tasks to avoid being counted absent. Instructors are required to submit attendance the Monday following each week of class.

This attendance is reported to the Financial Aid Department and may result in the loss of any financial aid refund you are expecting if you have not been participating in your courses. **In addition, you will be administratively dropped from the course if you are reported absent a total of three weeks.**

Grading/Evaluation:

Grading will be based on Discussion Forum entries, weekly assignments, quizzes, and a final presentation. Please see the written assignment rubric, presentation rubric, and discussion forum rubric found in the course information page for grading criteria and assignment expectations. A point breakdown for each assignment can be found in the course schedule.

Discussion Forum (25 points each)	200 points
Weekly Assignments (100 points each)	400 points
Quizzes/Exams (25 points each)	400 points
Total Points.....	1000 points

Note: Initial discussion forum posts are due on Wednesdays at 11:59PM EST. Two discussion forum replies, and other assignments are due on Sundays at 11:59PM EST. Assignments for the final week of class will be due on Saturday at 11:59PM EST.

Final grades follow the Trine grading system.

Grade	Grade %
A	90 - 100
B+	87 - 89
B	80 - 86
C+	77 - 79
C	70 - 76
D+	67 - 69
D	60 - 66
F	0 - 59

Late Policy:

There is a 20% penalty for each day an assignment is past due, up to 2 days. After 2 days, the assignment will not be accepted. Late discussion forum posts will not be accepted for credit. No assignments will be accepted after the last day of the course.

Academic Misconduct:

The University prohibits all forms of academic misconduct. Academic misconduct refers to dishonesty in examinations (cheating), presenting the ideas or the writing of someone else as one's own (plagiarism) or knowingly furnishing false information to the University by forgery, alteration, or misuse of University documents, records, or identification. Academic dishonesty includes, but is not limited to, the following examples: permitting another student to plagiarize or cheat from one's own work, submitting an academic exercise (written work, printing, design, computer program) that has been prepared totally or in part by another, acquiring improper knowledge of the contents of an exam, using unauthorized material during an exam, submitting the same paper in two different courses without knowledge and consent of professors, or submitting a forged grade change slip or computer tampering. The faculty member has the authority to grant a failing grade in cases of academic misconduct as well as referring the case to Student Life.

Plagiarism:

You are expected to submit your own work and to identify any portion of work that has been borrowed from others in any form. An ignorant act of plagiarism on final versions and minor projects, such as attributing or citing inadequately, will be considered a failure to master an essential course skill and will result in an F for that assignment. A deliberate act of plagiarism, such as having someone else do your work, or submitting someone else's work as your own (e.g., from the Internet, fraternity file, etc., including homework and in-class exercises), will at least result in an F for that assignment and could result in an F for the course.

Artificial Intelligence (AI) is prohibited: All work submitted by students in this course must be generated by the student. Students may not have another person or entity contribute to an assignment for them, which includes using AI. Students may not incorporate any part of an AI-generated response in an assignment, use AI to formulate arguments, use AI to generate ideas for an assignment, or submit work to an AI platform for improvement. Using an AI tool to generate content may qualify as academic misconduct in this course.

OR

Artificial Intelligence (AI) is allowed: Students may use AI tools on instructor-identified assignments in this course. To adhere to our scholarly values, students must cite any AI-generated material that informed their work. Using an AI tool without proper attribution may qualify as academic misconduct in this course. It is the responsibility of the student to verify the accuracy, reliability, and ethical implications of AI-generated content.

Electronic Devices:

Use of electronic devices including smart watches and cell phones is prohibited during exams or quizzes unless directly allowed by the instructor.

Student Resources:

Please visit the Student Resources tab in our course to find resources including technical support, tutoring, library resources, accommodations, accessibility, technology requirements, counseling services and many other resources.

Course Calendar/Schedule: Please see "Course Schedule" in course information tab.

Course Mapping:

Week One: LO1	
Learning Activities and Materials	Assessments
<p>Read:</p> <ul style="list-style-type: none"> • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 1,2,3) (LO1) • Computer Hardware and Software (LO1) <p>Watch:</p> <ul style="list-style-type: none"> • Hardware and Software (LO1) (5:22) • Types of Software(LO1) (5:47) • Peripherals (LO1) (12:34) • Inside a computer (LO1) (2:16) • Buttons and Ports on a Computer (LO1) (2:29) 	<p>Discussion:</p> <ul style="list-style-type: none"> • Examine the relationship between a computer's hardware, operating system, and application software to complete a specific task. In what ways does system software differ from application software? (LO1) <p>Assessment:</p> <ul style="list-style-type: none"> • Crossword Vocabulary Exam (LO1) <p>Hardware Quiz (LO1)</p>
Week Two: LO1,2	
Learning Activities and Materials	Assessments
<p>Read:</p> <ul style="list-style-type: none"> • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 4,10) (LO1) • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 5,11) (LO2) <p>Watch:</p> <ul style="list-style-type: none"> • Laptop Hardware(LO1)(17:18) • Mobile Device Accessories(LO1)(9:03) • Mobile Device Connections (LO1) (6:54) • Top 5 Troubleshooting Steps in IT(LO2) (4:45) • Troubleshooting Common Hardware Problems (LO2)(18:17) • Troubleshooting Laptops (LO2) (7:27) • Troubleshooting Solutions(LO2) (18:16) 	<p>Discussion:</p> <ul style="list-style-type: none"> • Operating systems enable applications to access computer hardware. Explain how operating systems allow applications to take advantage of computer hardware. (LO1) • Argue the following: A computer problem is either a hardware or software issue. The general approach to solving computer problems is to eliminate software problems first, followed by hardware problems. (LO2) <p>Assessment:</p> <ul style="list-style-type: none"> • Vocabulary Quiz (LO1) • Software Quiz (LO1) • In a two-page essay, explain how hardware and software are interconnected and interdependent to achieve computer functionality. (LO1) • Crossword Vocabulary Exam

	(LO2) Troubleshooting Hardware Quiz (LO2)
Week Three: LO2	
Learning Activities and Materials	Assessments
Read: <ul style="list-style-type: none"> • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 13,14) (LO2) Watch: <ul style="list-style-type: none"> • Operating System Troubleshooting (LO2) (14:06) • Troubleshooting Model (LO2) (12:55) • PC Troubleshooting Problems with Solutions (LO2)(19:07) 	Discussion: <ul style="list-style-type: none"> • Assess maintenance troubleshooting, which usually follows a systematic, four-step method: identify the problem, create a response, test the solution, and resolve it. (LO2) Assessment: <ul style="list-style-type: none"> • Vocabulary Quiz (LO2) • Troubleshooting Software Quiz (LO2) <p>Develop a two-page troubleshooting strategy describing how to diagnose and resolve hardware, software, and equipment problems. (LO2)</p>
Week Four: Overview (LOs)	
Learning Activities and Materials	Assessments
Read: <ul style="list-style-type: none"> • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 6,7) (LO3) Watch: <ul style="list-style-type: none"> • Networking Basics(LO3) (14:57) • Network Fundamentals (LO3) (11:34) • Network Devices (LO3)(15:25) • OSI Model: A Practical Perspective(LO3) (13:24) 	Discussion: <ul style="list-style-type: none"> • Compare and contrast Internet connection types (Cable, DSL, Fiber, Cellular, Satellite) and network types (LAN, WAN, PAN, MAN) and their features. (LO3) Assessment: • Crossword Vocabulary Exam (LO3) <p>Networking Quiz (LO3)</p>
Week Five: LO3,4	
Learning Activities and Materials	Assessments
Read: <ul style="list-style-type: none"> • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 8,12) (LO3) • CompTIA® A+® complete study guide: Exam Core 220-1001 and Exam Core 220-1002 (Chapters 4) (LO4) 	Discussion: <ul style="list-style-type: none"> • Briefly describe how you would troubleshoot a customer's laptop that the user reports is not connected to the internet. (LO3) • Discuss cloud computing concepts (IaaS, SaaS, PaaS) and different types of clouds (public, private, hybrid). (LO4) Assessment:

Watch: <ul style="list-style-type: none"> • Wired Network Troubleshooting(LO3)(13:11) • 5 Basic Networking Commands That Everyone Should Know(LO3) (10:06) • Network Troubleshooting Methodology (LO3) (6:34) • Cloud Computing Explained(LO4) (8:36) • What is the cloud?(LO4) (3:00) • Cloud Computing Tutorial for Beginners(LO4)(24:37) 	<ul style="list-style-type: none"> • Vocabulary Quiz (LO3) • Troubleshooting Networks Quiz (LO3) • Create a two-page assessment of network failures and their direct impact on an organization's revenue. Explain how to reduce downtime using prevention techniques, troubleshooting methods, and troubleshooting steps. (LO3) • Crossword Vocabulary Exam (LO4) <p>Cloud Computing Quiz (LO4)</p>
Week Six: Overview (LOs)	
Learning Activities and Materials	Assessments
Read: <ul style="list-style-type: none"> • Virtualization Essentials (Chapters 1-3) (LO4) Watch: <ul style="list-style-type: none"> • Virtualization Explained(LO4) (10:10) • Virtualization in Cloud Computing(LO4) (11:24) • What is Type 1 and Type 2 Hypervisor(LO4)(8:29) • Network Virtualization Simplified(LO4)(11:43) 	Discussion: <ul style="list-style-type: none"> • Evaluate the two types of hypervisors and their role in virtualization (LO4) Assessment: <ul style="list-style-type: none"> • Vocabulary Quiz (LO4) • Virtualization Quiz (LO4) • Provide a two-page analysis of the importance of Virtualization in the foundation of cloud computing and the key benefits it can provide to an organization. (LO4)

References

CNBC International (2018, November 22). *What is the cloud?* [Video]. YouTube.

<https://www.youtube.com/watch?v=i9x0UO8MY0g>

Coding Env (2021, March 15). *Network virtualization simplified* [Video]. YouTube.

<https://www.youtube.com/watch?v=QE5y5PLqZZI>

Coding Env (2021, March 18). *What is hypervisor?* [Video]. YouTube.

<https://www.youtube.com/watch?v=ziuSPrne88M>

GCFLEarnFree.org (2020, August 21). *Computer basics: Buttons and ports on a computer* [Video].

YouTube. <https://www.youtube.com/watch?v=yq9qzw8p7FI>

GCFLEarnFree.org (2020, September 3). *Computer basics: Inside a computer* [Video]. YouTube.

<https://www.youtube.com/watch?v=HB4I2CgkcCo>

Intellipaat (2020, March 20). *Virtualization in cloud computing* [Video]. YouTube.
<https://www.youtube.com/watch?v=pPlanX5wQY>

I.T. Career Questions (2019, January 23). *Top 5 troubleshooting steps in IT* [Video]. YouTube.
<https://www.youtube.com/watch?v=sJGVaJlledM>

Itfreetraining (2021, May 15). *COMPTIA trouble shooting model* [Video]. YouTube.
<https://www.youtube.com/watch?v=bdQplkceM4k>

IT k Funde (2021, January 1). *5 basic networking commands for everyone* [Video]. YouTube.
<https://www.youtube.com/watch?v=SK8D1bdJh7s>

IT k Funde (2020, May 6). *Networking basics* [Video]. YouTube.
https://www.youtube.com/watch?v=IOZ8_cPgu8

Khan Academy (2018, January 16). *Hardware and software* [Video]. YouTube.
<https://www.youtube.com/watch?v=VzVSt6jxiqw>

Make It Easy Education (2020, September 23). *Types of software* [Video]. YouTube.
<https://www.youtube.com/watch?v=BTB86HeZVwk>

PowerCert Animated Videos (2021, November 17). *Cloud computing explained* [Video]. YouTube.
<https://www.youtube.com/watch?v=a6us8kaq0g>

Practical Networking (2020, December 24). *OSI model: A practice perspective* [Video]. YouTube.
<https://www.youtube.com/watch?v=LkolbURrTs>

Practical Networking (2020, December 16). *Hub, bridge, switch, router* [Video]. YouTube.
<https://www.youtube.com/watch?v=H7-NR3Q3Bel>

Practical Networking (2020, December 11). *Network devices: Hosts, IP Addresses, Networks* [Video]. YouTube.
<https://www.youtube.com/watch?v=bj-Yfakjllc>

Professor Messer (2021, November 16). *Network troubleshooting methodology* [Video]. YouTube.
<https://www.youtube.com/watch?v=L-hlrK9Dq7I>

Professor Messer (2019, March 8). *Peripherals* [Video]. YouTube.
<https://www.youtube.com/watch?v=OEYflr3Gks>

Professor Messer (2022, April 16). *Mobile device accessories* [Video]. YouTube.
<https://www.youtube.com/watch?v=7730jdd9eVU>

Professor Messer (2022, April 12). *Laptop hardware* [Video]. YouTube.
<https://www.youtube.com/watch?v=y7oHZ1mi7e4>

Professor Messer (2019). *Mobile devise connections* [Video]. YouTube.
<https://www.youtube.com/watch?v=FiMgMiBwJg0>

Professor Messer (2021, November 16). *Wired network troubleshooting* [Video]. YouTube.
<https://www.youtube.com/watch?v=wHo-lpFbllo>

Professor Messer (2019, March 26). *Troubleshooting common hardware problems* [Video]. YouTube. <https://www.youtube.com/watch?v=p4VxERfTHgU>

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Professor Messer (2016, February 21). *Operating system troubleshooting* [Video]. YouTube. <https://www.youtube.com/watch?v=6gainrNiypc>

Professor Messer (2019, June 13). *Troubleshooting solutions* [Video]. YouTube. <https://www.youtube.com/watch?v=WUCXf9pamZE>

Simplilearn (2021, September 10). *Virtualization explained* [Video]. YouTube. <https://www.youtube.com/watch?v=Wb68Exu6jtU>

Simplilearn (2018, May 18). *Cloud computing tutorial for beginners* [Video]. YouTube. <https://www.youtube.com/watch?v=RWgW-CgdIk0>

SkillsBuild Training (2021, April 23). *Top 30 desktop PC troubleshooting problems with solutions* [Video]. YouTube. <https://www.youtube.com/watch?v=kJ4KiUk-HuY>