Minnesota State Community and Technical College
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Enterprise Network Technologies
CPTR 2245

Course Description

This course will introduce information technologies used in an enterprise network environment. This course follows computing development from single hardware/single operating system operation to virtualization to container technology to implementation on the cloud. Students work with technology from each phase of computing development. The class discusses current trends within enterprise networking.

Prerequisite: None. (3 Credits / 2 presentation, 1 Lab, 0 other)

Competencies

- Discuss the roles that teamwork, ethics and legal considerations play in an IT organization.
- Discuss various factors including basic architecture that affect the performance of cloud applications.
- Discuss various concepts and technologies related to cloud computing.
- Contrast virtualized and non-virtualized platforms.
- Contrast various networking topologies in terms of robustness, expandability and throughput used within a cloud enterprise.
- Distinguish cloud service categories including public, private and hybrid clouds and be aware of privacy regulation impact on cloud application requirements.
- Explain virtualization for applications and network platforms.
- Implement virtualization for desktops and servers.
- Implement a storage environment including appropriate performance measurement tools.

Course Ethical Foundation

This course requires students to build and demonstrate working projects. The design and implementation will follow the ethical guidelines of the Association for Computing Machinery (ACM). Students should contact the instructor with specific ethical questions.

Text and References

Title: Network Performance and Security: Testing and Analyzing Using Open Source and Low-Cost Tools
Author: Chris Chapman
Edition:
Publisher: Syngress Publishing
Year   2016
ISBN: 9780128035849

Title: Overview of Cloud Computing
Author: Michael Wufka and Massimo Canonico
Edition:
Publisher: CC license
Year   2022
ISBN:

These books are available in the ACM member Learning Center.

A portable computer capable of completing the class assignments is required. The portable must be capable of successfully running VMware Player images of 4 GB of RAM and 60 GB disk.

Student Contributions

Each student will spend at least 4 hours per week preparing for class. Attendance is critical in this class. Students will come to class prepared to discuss the assigned reading or topic. Students will manage their time to complete the class

requirements.

Did I miss anything important in the class I missed? The answer is yes. The student is responsible for contacting a classmate for the details.

Course Evaluation

Article Reports
Students will choose a current article dealing with **Enterprise Networking**. The article must be publish in a professional magazine within *two months of the article report due date*. Contact your instructor with questions about appropriate articles.

Article reports are worth a total of 100 points.

Rubric	Points
The article report is the first original post in the correct D2L Bright Space group. The instructor must give permission to use the same article report in another class.	5
The article is published no later than two months before the article report due date.	5
The article report posting is before the beginning of class.	5
The article report includes a valid URL to the original article.	5
The article report includes the author's name.	5
The article report includes a maximum of ten quoted words.	10
The article report summary is more than 5 sentences and less than 10 sentences.	15
The article report relevance or impact statement is more than 2 sentences and less than 5 sentences.	15
The article report presentation in class or a 2 to 5 sentence reaction to three other class article reports are done by the due date.	15
The article report summary and reaction contain less than two spelling or grammar errors as defined by the instructor's word processor spelling and grammar checker.	20

Labs
All the lab sections are pass/fail. Each lab section successfully completed is approximately 25 points. Each lab is worth 100 points. A successful completed lab section consists of the lab section elements done to the instructor's specifications. Students may modify incomplete lab sections until the date specified in the calendar. All labs must be completed by the final due date for that group of labs. Students will submit their lab section answer(s) to the correct provided D2L drop box.

Quizzes
Students will take 10 quizzes given on the D2L site. Each quiz deals with a specific chapter(s) in the assigned text. The weekly quiz will be available at 1:00 am on Sunday of the quiz week and will close at 10:00 pm on Saturday of the quiz week. Students will have a maximum of one hour to complete each weekly quiz. Students may use the text and other references to complete the quiz.

Students may **not** reschedule a quiz.

Skills Final
Each student must complete the class assigned skills final. This is worth a total of 500 points toward the student's final grade. Detail information about the final comes later in the semester.

Scale
100% - 90% A
89% - 80% B
79% - 70% C
69% - 60% D
59% - 0 F

The midterm grade calculation for this class is the following.

Your midterm grade includes Labs 1 through 4, Quizzes 1 through 5 and Article Report 1.

Letter Grade	Max Percent	Max Points	Min Percent	Min Points
A	100%	1000	90%	900
B	89.99%	899.9	80%	800
C	79.99%	799.9	70%	700
D	69.99%	699.9	60%	600
F	59.99%	599.9	0%	0

The final class calculation for this class is the following.

Your final grade includes Labs 1 through 10, Quizzes 1 through 10, Article Reports 1 through 3 and the Portfolio (Final).

Letter Grade	Max Percent	Max Points	Min Percent	Min Points
A	100%	2700	90%	2430
B	89.99%	2429	80%	2160
C	79.99%	2159	70%	1890
D	69.99%	1889	60%	1620
F	59.99%	1619	0%	0

The instructor reserves the right to modify grades for extraordinary reasons.

The grade incomplete is very difficult for students. Students that need this option must discuss an incomplete with the instructor two weeks before the class final.

Classroom Management
This class prepares students for professional work. It is important students learn and practice the norms expected of a working professional in Information Technology. It is important for students avoid inappropriate or offensive images or speech.

The class instructor is responsible for the class environment. This means anything that distracts members of the class from learning is a concern. In the event of a distraction, a meeting is set up with the class instructor or college administrator. The result of this meeting must be a written plan to deal with the distractions. The affected parties must approve the plan within 72 hours. Failure to create or follow the plan may result in expulsion.

Stealing is against the law. There are many forms of stealing. Plagiarism is simply stealing someone else's work. In some cases, working in groups could be stealing or cheating. Failure to give proper credit or doing required individual work with unauthorized resources results at least a 100% reduction of points in the assignment to entire class failure. Students may help each other. One measure of cheating or not, is both students able to complete the assignment without the other? Students are encouraged to contact the instructor with questions.

Department policy requires student to use email address provided by M STATE. Students must arrange to configure a system to use and at least weekly check for class email. Additional department policies are at http://brazil.minnesota.edu.

Industry practice, Minnesota State, and M STATE policy and procedures do not allow sharing of logons/logins. Each student will be the only person using the assigned logon/login. Contact your instructor with any questions or concerns.

The instructor does record the class, if he remembers. The class recordings are available through a link on D2L Bright Space. The instructor grants permission for recording for the student's educational use only. Once the school term is complete, students must effectively destroy the recordings. The recording may not be distributed. Contact your instructor with any questions.

Accessibility Resources Statement

M State is committed to providing equal access to education for all students. Students who have a disability or believe they may have a disability are invited to connect with the Accessibility Resources office as soon as possible to determine eligibility and/or submit accommodation requests. Please visit https://www.minnesota.edu/accessibility-resources to apply for services, to contact Accessibility Resources personnel or for additional information.

Any student with a disability that might affect performance in this class is encouraged to contact the instructor at the beginning of the course.

ACADEMIC PERFORMANCE SYSTEM Statement

M State has an Academic Performance system in order to provide a means for M State to do everything in its power to help each M State student succeed. This system allows instructors to report when students are not attending, not doing well on assignments and would benefit from tutoring, needs to be connected with resources either on or off campus, or is failing the course. This system is also a way for instructors to reward the positive behavior you are demonstrating in class by submitting a "Wow, Well-done!" If you receive an e-mail or phone call from Student Development Services regarding your performance, this is because I have used the system.

FN, FW, and W Statement If you decide not to complete a course at M State, you must abide by set deadlines: FN: Federal regulations require that a FN (No Show) grade be submitted if a student does not participate in a course before the end of the add drop period. If you do not actively participate by August 31st, you will earn an FN (Education Policies – Failure for Non-Attendance policy). FW: Federal regulations also require that a FW (Failure to Withdraw) grade be submitted and last date of attendance be recorded in the grading system for any student who has "ceased active participation for 14 consecutive calendar days (including holidays) prior to the end of the term" (Education Policies - Failure to Withdraw policy). W: If you decide to withdraw after August 31st, you must do so by the end of the day on November 28th, 2018. If you meet this deadline, you will have a W (which represents Withdraw) on your transcript (unless you have already earned an FW for not participating for 14 calendar days); if you do not meet this deadline, you will earn a grade in the course (Education Policies - Drop/Add/Withdraw policy).

ACADEMIC INTEGRITY AND HONESTY Statement*

At M State "students are expected to meet their academic requirements with honesty and integrity" (Student Handbook 17). Examples of academic dishonesty include cheating, plagiarizing, self-plagiarizing, altering source information, creating information, and attributing it to a source, and working collaboratively and not crediting all creators. Note that your handbook specifies that "all students are expected to be the sole authors of their work and acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another student's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct" (17). For more information about M State's policy regarding academic dishonesty see page 17 of the Student Handbook.

In this course, if I determine that an assignment, is an example of academic dishonesty—I will assess the situation and one of the following penalties will occur as listed above.

SERVICE MEMBER Statement

M State is dedicated to assisting veterans and eligible family members in achieving their educational goals. If you are a member of the military and are currently serving, apprise me of regularly scheduled military training and duties that conflict with scheduled course requirements. I will work with you to address issues that arise. For further information on this, refer to MnSCU Procedure 5.12.1 Military Service and Disabled Veterans.

If you are a service member or veteran, please contact an M State Veterans Higher Education Regional Coordinator for information regarding educational benefits and opportunities: Moorhead: D124 Aaron Jensen 218-299-6925 or 218-329-6040 (cell) /aaron.jensen@state.mn.us

Title IX: Sexual Violence

M State is committed to creating a safe and open learning environment for all students. If you or someone you know has experienced sexual harassment, including sexual assault, dating or domestic violence, or stalking, please know that help and support are available. M State strongly encourages all members of the community to take action, seek support, and report incidents of sexual harassment to the Title IX Office. You may contact the Title IX Office at 218-299-6522 or at titleix@minnesota.edu

If you wish to speak to a confidential resource, you may utilize the following contacts:
- • M Sate Counselors - www.minnesota.edu/student-support/meet-the-counselors
- • M State Social Workers - www.minnesota.edu/social-workers

For more information about reporting options or to submit a report online and for additional resources, please visit www.minnesota.edu/title-9

Title IX: Pregnancy, Childbirth, & Breastfeeding
M State does not discriminate against any student on the basis of pregnancy or related conditions. Absences due to medical conditions relating to pregnancy will be excused for as long as deemed medically necessary by a student's doctor, and students will be given the opportunity to make up missed work. Students needing pregnancy-related accommodations can seek assistance from the Title IX Office, 218-299-6522 or at titleix@minnesota.edu or from the Accessibility Resources Office, www.minnesota.edu/accessibility-resources.

Basic Needs Support
M State recognizes that many students experience challenges (e.g., accessing enough food to eat every day, safe and stable housing, issues with childcare, family obligations, physical and mental health, unexpected bills or issues with accessing technology) that create stress and anxiety in their lives outside the classroom, and those challenges can impact their academic performance.
As a student, your safety, health and well-being are our primary concerns, and we (all who work at M State) want to be able to support you in any way that we can.
If you are facing challenges, you are urged to visit the Basic Needs Support Section of the M State Site to access a variety of resources and or/contact one of M State's social workers.

Counseling Services
M State Counseling Services offers free and confidential counseling to all students. Referrals to community agencies for students needing or wanting longer term or specialized resources is also available. Counseling Services are offered to students of all backgrounds, races, religious beliefs, sexual orientations, gender identities, abilities, ethnicities, and cultures in a safe place to discuss and resolve issues that interfere with personal and academic goals. Information can be found at Counseling Services.

Students also have free, 24/7 access to TalkCampus, which is a global mental health support network offering peer support to students from across the globe. Students can download the app or go to the website.

Additional Policy Statements
Understanding the College's policies and procedures will help contribute to your success as a student, and it is something we expect of you. You may find the Student Handbook at www.minnesota.edu/handbook.

Additional information is at http://brazil.minnesota.edu/syllabus/syllabus.html or http://sweden.minnesota.edu/syllabus/syllabs.html .

This document is the plan of action for the class.

Course Schedule

Week01
1/9/2023, Monday
        First Day of Classes
        Introduction
1/11/2023, Wednesday
        Last Day to add classes
        VMware Setup
1/13/2023, Friday
        Last Day to drop classes

Week02
1/15/2023, Sunday
        Quiz 01 opens at 1:00 am over Wufka - Fundamentals
1/16/2023, Monday
        Martin Luther King Holiday - no classes
1/18/2023, Wednesday
        Fundamentals

Lab 01
1/21/2023, Saturday
Quiz 01 closes at 10:00 pm over Wufka - Fundamentals

Week03
1/22/2023, Sunday
Quiz 02 opens at 1:00 am over Wufka - Technical Foundations
1/23/2023, Monday
Technical Foundations
1/25/2023, Wednesday
Lab 02
1/28/2023, Saturday
Lab 01 due at 10:00 pm
Quiz 02 closes at 10:00 pm over Wufka - Technical Foundations

Week04
1/29/2023, Sunday
Quiz 03 opens at 1:00 am over Wufka - Cloud Computing Platforms
1/30/2023, Monday
Cloud Computing Platforms
2/1/2023, Wednesday
Lab 03
2/3/2023, Friday
Priority application deadline for spring graduates
2/4/2023, Saturday
Quiz03 closes at 10:00 pm over Wufka - Cloud Computing Platforms

Week05
2/5/2023, Sunday
Quiz 04 opens at 1:00 am over Wufka - Types of Cloud Services
2/6/2023, Monday
Types of Cloud Services
2/8/2023, Wednesday
Lab 04
2/11/2023, Saturday
Quiz 04 closes at 10:00 pm over Wufka - Types of Cloud Services

Week06
2/13/2023, Monday
Lab Work
Article Report 01 in class presentation
2/18/2023, Saturday
Labs 02, 03, and 04 due at 10:00 pm
Article Report 01 non class presenting responses due at 10:00 pm

Week07
2/19/2023, Sunday
Quiz 05 opens at 1:00 am over Wufka - Cloud Architecture
2/20/2023, Monday
M State -President Day Holiday
2/22/2023, Wednesday
Cloud Architecture
Lab 05
2/25/2023, Saturday
Quiz 05 closes at 10:00 pm over Wufka - Cloud Architecture

Week08

2/26/2023, Sunday

Quiz 06 opens at 1:00 am over Wufka - Cloud Security opens

2/27/2023, Monday

Cloud Security

3/1/2023, Wednesday

Lab 06

3/4/2023, Saturday

Quiz 06 closes at 10:00 pm over Wufka - Cloud Security

Week09

3/5/2023, Sunday

Quiz 07 opens at 1:00 am over Wufka - Multi-Cloud-Systems & Chapman - Build Your Own Network Elements

3/6/2023, Monday

Registration opens for Summer and Fall 2023 classes

Multi-Cloud-Systems

3/8/2023, Wednesday

Lab 07

3/10/2023, Friday

Priority application deadline for summer graduates

3/11/2023, Saturday

Quiz 07 closes at 10:00 pm over Wufka - Multi-Cloud-Systems & Chapman - Build Your Own Network Elements

Week10

3/13/2023, Monday

Spring Break

3/14/2023, Tuesday

Spring Break

3/15/2023, Wednesday

Spring Break

3/16/2023, Thursday

Spring Break

3/17/2023, Friday

Spring Break

Week11

3/19/2023, Sunday

Quiz 08 opens at 1:00 am over Wufka - Cloud Operations

3/20/2023, Monday

Cloud Operations

3/22/2023, Wednesday

Lab Work

3/25/2023, Saturday

Quiz 08 closes at 10:00 pm over Wufka - Cloud Operations

Week12

3/27/2023, Monday

Lab Work

3/29/2023, Wednesday

Article Report 02 in class presentation

4/1/2023, Saturday

Labs 05, 06, and 07 due at 10:00 pm
Article Report 02 non class presenting responses due at 10:00 pm

Week13
4/2/2023, Sunday
Quiz 09 opens at 1:00 am over Chapman - Chapters 2 & 3
4/3/2023, Monday
Getting Organized and Locking Down the Infrastructure
4/5/2023, Wednesday
Lab 08
Lab 09
4/8/2023, Saturday
Quiz 09 closes at 10:00 pm over Chapman - Chapters 2 & 3

Week14
4/9/2023, Sunday
Quiz 10 opens at 1:00 am over Chapman - Chapters 4 & 7
4/10/2023, Monday
Locking Down Windows & Using Wireshark
4/12/2023, Wednesday
Lab 09
Lab 10
4/13/2023, Thursday
Last Day to Withdraw
4/14/2023, Friday
M State Administrative Duty Day - no classes
4/15/2023, Saturday
Quiz 10 closes at 10:00 pm over Chapman - Chapters 4 & 7

Week15
4/17/2023, Monday
Using Wireshark
4/19/2023, Wednesday
Lab 10

Week16
4/24/2023, Monday
Lab Work
4/26/2023, Wednesday
Article Report 03 in class presentation
4/29/2023, Saturday
Labs 08, 09, and 10 due at 10:00 pm
Article Report 03 non class presenting responses due at 10:00 pm

Week17
5/1/2023, Monday
M State -Finals
5/2/2023, Tuesday
M State -Finals
5/3/2023, Wednesday
M State Finals due at 10:00 pm
5/4/2023, Thursday
M State - Grading Day
5/5/2023, Friday
M State Commencement

The instructor reserves the right to modify the schedule and/or lab requirements.

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Developed: August 15, 2001
Revised: December 26, 2022