Discipline	Course Number	Title
Computer Networking Technology	211	CNT 211 05/10/2019- Installation, Storage, and Compute - Windows Server 2016
Division	Department	Faculty Preparer
Business and Computer Technologies	Computer Science & Information Technology	William Reichert
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

> Yes
>
> This course was previously assessed in Fall of 2008 and the Fall of 2011 (submitted in 2012).

2. Briefly describe the results of previous assessment report(s).

> 2008 Assessment Test:
> Overall Average - 83.4%
> Outcome #1 Average 83.3%
> Outcome #2 Average 88.8%
> Outcome #3 Average 81.5%
> Outcome #4 Average 82.9%
> Outcome #5 Average 82.5%
>
> Strengths: Active directory administration, Server Management, Group Policy Implementation, Printer Configuration and Disk Management Activities.
>
> Weaknesses: Types of RAID used for disk fault tolerance, use of Windows User Rights for Security, and differences between Print Servers and Print Clients.
>
> 2012 Assessment Test:
>
> Overall Average: 76.4%
> Percentage of Students exceeding 70% average on the test: 73%
> Outcome #1: Average 67.4%

Outcome #2: Average 80%
Outcome #3: Average 68.8%
Outcome #4: Average 82.9%
Outcome #5: Average 83.7%

Strengths: Understanding Active Directory Logical Structure; understanding NTFS and Share Security Permissions; Encryption Methods: methods of publishing, implementing Shadow Copies and creating and configuring Group Policies in Active Directory

Weaknesses: Relationships associated with DNS (Domain Name Services) and Active Directory, differences between the different type of groups used within Active Directory for both Resource control and User control.

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

Implementation of Action Plans and Changes - 2008 Assessment:

Improvements Made: Stronger emphasis on the use of User Rights for Security Control; better differentiation between Print Clients and Servers during lectures and lab projects; placing greater emphasis to the types of RAID for disk fault tolerance.

1. Differentiation between User Rights and User Permissions. This is now reviewed three different times in the course and resulted in a significant improvement in the 2012 Assessment.

2. Differentiation between a Print Client and Print Server. Due to course changes, this was addressed in the 2012 version of CNT223, where considerably more lecture time was spent contrasting the two types of printing. In the assessment of that course, printing was no longer a weakness.

3. Differentiation between the various forms of RAID for Fault Tolerance. Again, due to course changes, this was addressed in the 2012 version of CNT224 where additional lecture time was spent contrasting the types of RAID. In addition, the lab project associated with this was altered such that ALL forms of RAID that Microsoft supported were tested, each being contrasted with each other. Actually, the present version of CNT211 does again have RAID for disk fault tolerance an integral part of the course. As will be pointed out later, this is no longer a weakness.

Implementation of Active Plans and Changes - 2012 Assessments

Improvements Made: Stronger emphasis on the use of DNS within Active Directory through lecture and labs; additional material added to lectures

concerning the differentiation of the three main types of Active Directory Groups and revisions to the lab project using, contracting, and implementing all three types.

1. Use of Domain Name Services with Active Directory including the understanding of "Integrated Zones", replication within Active Directory, and having a combined DNS Server/Domain Controller. Note that this particular objective is now in the CNT224 course, and a whole class (lecture and lab) are now devoted to DNS/Active Directory relationships.

2. Understanding the use of the three different types of Security Groups within Active Directory - Universal, Global, and Domain Local. Note again that this particular objective is now also in the CNT224 course, and both the lecture and lab have been totatally revised to address this issue. The lecture introduced three to four new slides strictly contrasting the three different types of groups, and the lab project added "Child Domains" so that all three types could be implemented, configured, tested, etc. to drive home the important points about each.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify the Windows Server editions, the types of installations, including the techniques for configuring the graphical version, Server Core, Nano Server, and Window Server Containers using virtualization techniques within Hyper-V, performing installations over the network and performing subsequent post-installation tasks using the command line and PowerShell.

- Assessment Plan
    - Assessment Tool: Written exam specifically created for the assessment
    - Assessment Date: Fall 2020
    - Course section(s)/other population: All course sections
    - Number students to be assessed: All students
    - How the assessment will be scored: Rubric: A written test will be given that addresses both the outcomes and objectives listed in the syllabus. This test will be divided into sections, each identified with an outcome, and the questions in each section will address the objectives.
    - Standard of success to be used for this assessment: Average of all students taking the test should equal or exceed 70% correct answers for all questions used in the assessment test. 70% or greater of the number of students taking the assessment test should equal or exceed that 70% mark for all the questions used in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equals or exceeds 70%.

o   Who will score and analyze the data: All departmental instructors who teach sections of this course

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
20	20

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

There was no difference in the number enrolled versus the number taking the test - every student took the assessment test.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of this course per semester. It is a Face-to-Face course held on the main campus and was offered at night this semester. It met once per week, four hours per session for 15 weeks, resulting in 60 hours of classroom time. Again, all enrolled students from this course took the assessment test.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A forty-question multiple choice test was designed for all five outcomes with eight questions assigned to each outcome. Questions were chosen for this test that reflected the objectives which were most important for students to retain. The students were given this test directly after taking the final section test for the course on the last day of class. The results were automatically scored using a SCANTRON grading machine which also printed out a summary of all scores. Since the test was organized by Outcome, this made the evaluation easier to do. A copy of the SCANTRON summary sheet as well as the actual assessment test is submitted as part of this assessment report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this

learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
Overall Average Percent for the entire test: 32.1/40 **80.0%** Percentage of Students exceeding 70% for the entire test: 15/20 **75.0%** Overall Average Percent for Outcome #1 148ques/160ques **92.5%** Percentage of Students exceeding 70% for this Outcome: 19/20 **95.0%** Based on the rubric in the Assessment Plan, as you can see directly above, the "Standard of Success" was met in all three areas for this outcome. However, I added another "Standard of Success" to the original rubric. It is "For each Outcome, 70% of the students must have 70% or above". For this outcome, that standard of success was met as well.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Areas of strength were Server installation features, purpose of a Server in a Client Server network, and most areas covering Virtual Machine installation and configuration.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Generally, all students all did very well, so only two areas need to be discussed: the use of Dynamic Memory with virtual machines and the main purpose of a Nano Server installation. For improvement, during lecture, a greater emphasis will be put on the purpose and use of Dynamic Memory when talking about virtualization with possible additional examples of using it. Also with Nano Server, a small version of the Windows operating system, the fact will be emphasized that the reason it is a single purpose server is due to its size. However, it should be pointed out that a great majority of the students had no trouble understanding these concepts.

Outcome 2: Identify the principles related to installing various storage solutions including implementing various forms of RAID, (0,1,3), storage spaces with thin provisioning, and iSCSI fault tolerant storage with simultaneous access from multiple servers.

- Assessment Plan
  - Assessment Tool: Written exam specifically created for the assessment
  - Assessment Date: Fall 2020

- o Course section(s)/other population: All course sections

- o Number students to be assessed: All students

- o How the assessment will be scored: Rubric: A written test will be given that addresses both the outcomes and objectives listed in the syllabus. This test will be divided into sections, each identified with an outcome, and the questions in each section will address the objectives.

- o Standard of success to be used for this assessment: Average of all students taking the test should equal or exceed 70% correct answers for all questions used in the assessment test. 70% or greater of the number of students taking the assessment test should equal or exceed that 70% mark for all the questions used in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equal or exceeds 70%.

- o Who will score and analyze the data: All departmental instructors who teach sections of this course

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
20	20

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

There was no difference in the number enrolled versus the number taking the test - every student took the assessment test.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of this course per semester. It is a Face-to-Face course held on the main campus and was offered at night this semester. It met once per week, four hours per session for 15 weeks, resulting in 60 hours of classroom time. Again, all enrolled students from this course took the assessment test.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A forty-question multiple choice test was designed for all five outcomes with eight questions assigned to each outcome. Questions were chosen for this test that reflected the objectives which were most important for students to retain. The students were given this test directly after taking the final section test for the course on the last day of class. The results were automatically scored using a SCANTRON grading machine which also printed out a summary of all scores. Since the test was organized by Outcome, this made the evaluation easier to do. A copy of the SCANTRON summary sheet as well as the actual assessment test is submitted as part of this assessment report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

These are the results based on the rubric (Standard of Success) shown above.

Overall Average Percent for the entire test: 32.1/40   **80.0%**
Percentage of Students exceeding 70% for the entire test: 15/20   **75.0%**
Overall Average Percent for Outcome #2   125 ques/160ques   **78.1%**
Percentage of Students exceeding 70% for this Outcome: 14/20   **70.0%**

Based on the rubric in the Assessment Plan, as you can see directly above, the "Standard of Success" was met in all three areas for this outcome. However, I have added another "Standard of Success" to the original rubric. It is "For each Outcome, 70% of the students must have 70% or above". For this outcome, that standard of success was met as well.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Strengths were in the understanding of basic disk structure and the various older forms of Disk fault tolerance which Windows supports such as RAID 0, 1, 5. The students are actually exposed to this information in more than just my class, and therefore generally have some background in it prior to coming into CNT211.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Weaknesses were apparent in the newer concepts associated with file systems and file storage. These are concepts which the students had not been exposed to, or hadn't been exposed to as much. This included the new sector/cluster sizes that Windows Server supports, Thin Provisioning used with the new Storage Spaces technology, and the characteristics and features of the newer virtual machine vhdx disk files.

As a result of this evaluation, I plan to increase the amount of time discussing the newer technologies to over 50% of the two lectures involved with this and decrease the time spent on the older technologies which, as I mentioned above, students are exposed to in other classes. This will include more images and other graphical representations of each concept.

Outcome 3: Recognize and identify the various implementations of server and client image preparation and deployment, including the use of the DISM and SysPrep Tools, plus implementing Windows Deployment Services in an Active Directory environment.

- Assessment Plan

    - Assessment Tool: Written exam specifically created for the assessment

    - Assessment Date: Fall 2020

    - Course section(s)/other population: All course sections

    - Number students to be assessed: All students

    - How the assessment will be scored: Rubric: A written test will be given that addresses both the outcomes and objectives listed in the syllabus. This test will be divided into sections, each identified with an outcome, and the questions in each section will address the objectives.

    - Standard of success to be used for this assessment: Average of all students taking the test should equal or exceed 70% correct answers for all questions used in the assessment test. 70% or greater of the number of students taking the assessment test should equal or exceed that 70% mark for all the questions used in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equal or exceeds 70%.

    - Who will score and analyze the data: All departmental instructors who teach sections of this course

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
20	20

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

No difference in the number enrolled versus the number taking the test - every student took the assessment test.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of this course per semester. It is a Face-to-Face course held on the main campus and was offered at night this semester. It met once per week, four hours per session for 15 weeks, resulting in 60 hours of classroom time. Again, all enrolled students from this course took the assessment test.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A forty-question multiple choice test was designed for all five outcomes with eight questions assigned to each outcome. Questions were chosen for this test that reflected the objectives which were most important for students to retain. The students were given this test directly after taking the final section test for the course on the last day of class. The results were automatically scored using a SCANTRON grading machine which also printed out a summary of all scores. Since the test was organized by Outcome, this made the evaluation easier to do. A copy of the SCANTRON summary sheet as well as the actual assessment test is submitted as part of this assessment report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
These are the results based on the rubric (Standard of Success) shown above. Overall Average Percent for the entire test: 32.1/40 **80.0%** Percentage of Students exceeding 70% for the entire test: 15/20 **75.0%**

Overall Average Percent for Outcome #2	122 ques/160ques	**76.2%**
Percentage of Students exceeding 70% for this Outcome: 16/20		**80.0%**

Based on the rubric in the Assessment Plan, as you can see directly above, the "Standard of Success" was met in all three areas for this outcome. However, I have added another "Standard of Success" to the original rubric. It is: "For each Outcome, 70% of the students must have 70% or above". For this outcome, that standard of success was met as well.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Strong points for this outcome include the process for creating, modifying, and deploying images of fresh operating systems including the use of SYSPREP and DISM, the file formats, and the understanding of Windows Pre-Execution Environment. Also the use of DOCKER, which instantly creates a Windows operating system directly from an Image was a strong point.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

There was only one really weak point in the evaluation of this outcome, and that was the understanding of the Modularization concept in programming Windows O.S.'s and the use of the WINSSS file for holding these modules of Programming.

For improvement, I am going to have to spend more time in lecture covering this area. I do have images and other graphics explaining these concepts. However, with the introduction of the new certifications for Server 2016/2019, I had to reduce the amount of time spent covering the modularization aspect of the image process in order to include more on SYSPREP and DISM, which are tools they actually use in their lab projects. I intend to retrieve a portion of what I had previously included in the course on modularization and incorporate it into what I already have, with the intention of improvement without a great deal of increased class time.

Outcome 4: Recognize and identify fault tolerant and load balancing solutions, including fail-over clustering with a separate iSCSI network, Network Load Balancing using web servers, and Hyper-V Migration and Replicas transferring live virtual machines between hosts.

- Assessment Plan
  - Assessment Tool: Written exam specifically created for the assessment

- o Assessment Date: Fall 2020

- o Course section(s)/other population: All course sections

- o Number students to be assessed: All students

- o How the assessment will be scored: Rubric: A written test will be given that addresses both the outcomes and objectives listed in the syllabus. This test will be divided into sections, each identified with an outcome, and the questions in each section will address the objectives.

- o Standard of success to be used for this assessment: Average of all students taking the test should equal or exceed 70% correct answers for all questions used in the assessment test. 70% or greater of the number of students taking the assessment test should equal or exceed that 70% mark for all the questions used in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equal or exceeds 70%.

- o Who will score and analyze the data: All departmental instructors who teach sections of this course.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
20	20

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

No difference in the number enrolled versus the number taking the test - every student took the assessment test.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of this course per semester. It is a Face-to-Face course held on the main campus and was offered at night this semester. It met once per week, four hours per session for 15 weeks, resulting in 60 hours of classroom time. Again, all enrolled students from this course took the assessment test.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

> A forty-question multiple choice test was designed for all five outcomes with eight questions assigned to each outcome. Questions were chosen for this test that reflected the objectives which were most important for students to retain. The students were given this test directly after taking the final section test for the course on the last day of class. The results were automatically scored using a SCANTRON grading machine which also printed out a summary of all scores. Since the test was organized by Outcome, this made the evaluation easier to do. A copy of the SCANTRON summary sheet as well as the actual assessment test is submitted as part of this assessment report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

> **Met Standard of Success:** <u>Yes</u>
>
> These are the results based on the rubric (Standard of Success) shown above.
>
> Overall Average Percent for the entire test: 32.1/40   **80.0%**
> Percentage of Students exceeding 70% for the entire test: 15/20   **75.0%**
> Overall Average Percent for Outcome #2   134 ques/160ques   **83.7%**
> Percentage of Students exceeding 70% for this Outcome: 16/20   **80.0%**
>
> Based on the rubric in the Assessment Plan, as you can see directly above, the "Standard of Success" was met in all three areas for this outcome. However, I have added another "Standard of Success" to the original rubric. It is "For each Outcome, 70% of the students must have 70% or above". For this outcome, that standard of success was met as well.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> Strengths included here were relatively advanced concepts of Network Load Balancing and Fail-Over Clustering. The lab project associated with Fail-Over Clustering is almost 70 pages long with complex configurations. Students understanding of "Affinity", "Convergence", the need for additional network cards in every server, and the different types of storage area networks was very strong.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

This Outcome had, however, one of three most frequently missed questions in the whole test dealing with one of the objectives in the outcome, which dealt with both Network Load Balancing and Failover Clustering. This concept, that of being able to differentiate the correct address to use for the Farm or Cluster from the Internet side, is something which I would consider extremely important to understand. Although this was emphasized heavily in both lecture and in the lab project, more emphasis is needed.

For improvement, like the format used in the objective's test question, I am going to include during lecture a group of IP addresses assocated with the Servers involved in the process and have them pick out the address used by Clients on the outside. Using this method in class should place the proper emphasis on the importance of this particular address.

Outcome 5: Identify and configure maintenance and security implementations including Windows backup, Windows Server Update Services (WSUS), data deduplication, and permissions including NTFS Security as well as share permissions.

- Assessment Plan

    - Assessment Tool: Written exam specifically created for the assessment

    - Assessment Date: Fall 2020

    - Course section(s)/other population: All course sections

    - Number students to be assessed: All students

    - How the assessment will be scored: Rubric: A written test will be given that addresses both the outcomes and objectives listed in the syllabus. This test will be divided into sections, each identified with an outcome, and the questions in each section will address the objectives.

    - Standard of success to be used for this assessment: Average of all students taking the test should equal or exceed 70% correct answers for all questions used in the assessment test. 70% or greater of the number of students taking the assessment test should equal or exceed that 70% mark for all the questions used in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equal or exceeds 70%.

    - Who will score and analyze the data: All departmental instructors who teach sections of this course

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)

	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
20	20

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

No difference in the number enrolled versus the number taking the test - every student took the assessment test.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of this course per semester. It is a Face-to-Face course held on the main campus and was offered at night this semester. It met once per week, four hours per session for 15 weeks, resulting in 60 hours of classroom time. Again, all enrolled students from this course took the assessment test.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A forty-question multiple choice test was designed for all five outcomes with eight questions assigned to each outcome. Questions were chosen for this test that reflected the objectives which were most important for students to retain. The students were given this test directly after taking the final section test for the course on the last day of class. The results were automatically scored using a SCANTRON grading machine which also printed out a summary of all scores. Since the test was organized by Outcome, this made the evaluation easier to do. A copy of the SCANTRON summary sheet as well as the actual assessment test is submitted as part of this assessment report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>No</u>
These are the results based on the Rubric (Standard of Success) shown above. Overall Average Percent for the entire test: 32.1/40 **80.0%** Percentage of Students exceeding 70% for the entire test: 15/20 **75.0%**

Overall Average Percent for Outcome #2   115 ques/160ques   **71.8%**
Percentage of Students exceeding 70% for this Outcome: 12/20   **60.0%**

Based on the Rubric in the Assessment Plan, as you can see directly above, the "Standard of Success" was met in all three areas for this outcome. However, I have added another "Standard of Success" to the original rubric. It is:
"For each Outcome, 70% of the students must have 70% or above". For this outcome, that standard of success was NOT met and therefore the "No" checkbox is checked below. Corrections will be addressed in the analysis and action plans..

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> Strengths within this Outcome include Windows Backup limitations and advantages, , WSUS Windows Server Update Services methods of Appoval and Installation, and features of the NTFS file system including Access Control Lists.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> While this Outcome exhibited some student strengths, it was the lowest of the 5 outcomes, and barely broke 70% overall, with less that 70% of the students achieving 70%. This was largely due to the lack of understanding of Share and NTFS security permissions, in particular:
>
> 1) How inheritance works between Parent and Child folders
>
> 2) How a User can obtain Permission or lack of it other than through his own individual permissions.
>
> As will be pointed ou in the Analysis section this has been a continual problem in past assessments and is largely due to the complexity involved in the evaluation. I have included more charts and "chains of evaluation" procedures, but these do not seem to be enough. I plan now to include many more examples in lecture, in class, which the students themselves will have to figure out, and do this "on the board" so all students will be included. I do not feel I have had enough of in-class examples of share versus NTFS, Inheritance, etc.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

First, a clarification: Like most anything in the IT field, the Microsoft Operating System Certifications changed from 2008 to 2012 and again between 2016 and 2019. This was the reason I included BOTH the 2008 and 2012 Assessments, as there were outcomes in 2008 that were not in 2012, but are in the latest 2016/2019 assessment. Also, there are Outcomes in the 2012 Assessment that were not in the 2008 Assessment that are in the 2016/2019 assessment. Finally there were Outcomes in 2016/2019 that were in neither of the previous two assessments. Based therefore on this clarification, below are the two areas that actually can be compared between this assessment and the previous two. Most come from the 2008 assessment where the Outcomes were, in many cases, the same.

1. **RAID - Disk Fault Tolerance** - This was a weakness in the 2008 assessment (and was not part of the 2012 Assessment). The action plan in 2008 which resulted in greater lecture time spent contrasting the types of RAID and the Lab project enhanced to cover all three forms of RAID that Microsoft supports was very successful. These improvements have resulted in RAID now being a strength rather than a weakness, and have resulted in all four of my Rubric goals being met in this Outcome.

2. **File System Permissions** - Well, we were not as successful in this area. In Outcome Five, three of the four rubric goals were met, but not the fourth one - 70% of the students getting 70% or higher for this outcome. This was the only goal below the Rubric standards in any of the Outcomes. This weakness in the 2008 assessment was addressed through an improved lecture with additional diagrams and charts describing the different types of permissions. Changes in the lab project contrasted not only share and NTFS permissions, but also contrasted the various permission levels within each structure. These changes provided a definite improvement, such that in the 2012 assessment it was a strength. However, we have fallen off again in this 2019 assessment but in different areas of permissions: Inheritance through the folder structure and the methods a User can obtain permissions outside of them being directly assigned to him. As pointed out in the previous section, I am now going to emphasize these two areas in my lectures and enhance the lab projects with additional tasks involving inheritance and User permission assignments. I should point out again, that there can be considerable complexity in permission inheritance and assignment, particularly as Microsoft's representations of them have become more and more complex throughout the Server Operating System iterations.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

Again, as I stated in the last two assessments, I feel my assessment tool and the method of applying it were effective in measuring whether the students had grasped and retained what I believe are the key concepts of the course expressed in my Course Outcomes and the Objectives that make up the Outcomes. Again, the

instructions I gave to the students emphasized that I did not want them to study specifically for the Assessment Test (they had the final course section test on the same day, and I DID want them to study for that). Also, I emphasized that taking this test would only affect their grade positively (I did give them extra points just for taking it). Therefore they had no reason to personally care about the results of this test, yet on the whole they did exceptionally well with the complex material covered in this course and certainly exceeded my expectations. I did ask that they try hard to answer the questions with the result that they did not rush on through it. They took considerable time in completing it, which gave me the indication that they did care about what they were doing. It was important to do as well as possible and demonstrate what they had learned. They actually retained a lot from the course. Since the test was designed and written around the concepts expressed in the Course Outcomes, and with 19 of the 20 goals met from the rubric, I feel that the assessment was a success.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

As far as the department faculty are concerned, I will be passing on the results of this assessment as well as the Action Plans associated with it to both the full-time instructors as well as the part-time instructors that teach this course, with the hope that they will implement the changes when presenting this course. As I am the primary instructor responsible for this course, and since I prepare all the materials, lectures, labs, etc. I will be the one to actually make the changes in both lectures and labs. However, the other instructors will be informed of the changes and will be responsible for implementing them when they teach the course.

4.
   Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Assignments	Although part of the lab project already deals with inheritance and User Assignments, I am going to make changes to these topics to actually break them down as isolated exercises (sections in the lab) rather than being part of the "overall permission testing"	The rationale lies in the failure of the students to meet the objectives dealing with Permissions which is part of Outcome #5. Obviously, I need to make changes to both lectures and lab projects which address these shortcomings. I fully intend to do	2019

	which they now are. By breaking them down, I will be giving more individual attention to each of the two topics which will hopefully result in better student understanding and retention of the material.	that. It will be difficult, as this particular part of the course (one whole four hour block), is hardly suitable to cover all aspects of this topic thoroughly. Also, as Microsoft is expanding the features of the Windows Server O.S. with each edition, there is really no opportunity to add additional time to the topic. I will therefore hopefully better utilize the time I do have.	
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	Changes will be made in the lectures and reflected in the lecture handouts, which will address the one serious week spot shown in the assessment: Permissions. Permission inheritance will be addressed as well as User Permission Assignments (being directly assigned, inheriting permissions, and being a part of a group which has a certain permission level). These changes will include a new flow	The rationale lies in the failure of the students to meet the objectives dealing with Permissions which is part of Outcome #5. Obviously I need to make changes to both lectures and lab projects which address these shortcomings. I fully intend to do that. It will be difficult, as this particular part of the course (one whole four hour block) is hardly suitable enough to cover all aspects of this topic thoroughly. Also, as	2019

	chart showing inheritance both from the parent levels and from the child level, reflecting exactly what happens when permissions are applied. Interactive discourse with students will now be used where they will have to track the Permission structure permission levels resulting in overall effective permissions for a particular user.	Microsoft is expanding the features of the Windows Server O.S. with each edition, there is really no opportunity to add additional time to the topic. I therefore will hopefully better utilize the time I do have.	

5. Is there anything that you would like to mention that was not already captured?

> The first attachment is a copy of the Summary Sheet for the Assessment Test which was divided up into five sections, each section representing one Outcome. The percentages shown in the report were calculated from the results shown on this sheet, as well as from the actual test sheets from each student.
>
> The 2nd attachment is an actual copy of the 40 question Assessment Test.

III. Attached Files

Scantron summary showing Assessment Results

Faculty/Preparer: William Reichert **Date:** 08/28/2019
Department Chair: Cyndi Millns **Date:** 08/29/2019
Dean: Eva Samulski **Date:** 08/31/2019
Assessment Committee Chair: Shawn Deron **Date:** 09/20/2019

COURSE ASSESSMENT REPORT

I. Background Information

1. Course assessed:

    Course Discipline Code and Number: CNT211
    Course Title: Windows Server 2008 Active Directory
    Division/Department Codes: BCT/CISD

2. Semester assessment was conducted (check one):
    ☒ Fall 2011
    ☐ Winter 20__
    ☐ Spring/Summer 20__

3. Assessment tool(s) used: check all that apply.
    ☐ Portfolio
    ☐ Standardized test
    ☐ Other external certification/licensure exam (specify):
    ☐ Survey
    ☐ Prompt
    ☒ Departmental exam
    ☐ Capstone experience (specify):
    ☐ Other (specify):

4. Have these tools been used before?
    ☒ Yes
    ☐ No

    If yes, have the tools been altered since its last administration? If so, briefly describe changes made.

    This assessment test has been considerably changed since the one in 2008, largely due to the fact that Microsoft's requirements have changed significantly for certification since that time, with the MCTS/MCITP replacing the MCSA/MCSE. The requirements for the brand new MCTS certification now dealing solely with Active Directory, rather than a Server Overview course, has meant a total rewrite of two of the five sections of the assessment test to reflect these changes. Basic Active Directory Administration, Permissions, the Group Policy sections are the only ones which have remained intact.

5. Indicate the number of students assessed/total number of students enrolled in the course.

    16 were enrolled in the class at the end of the semester, 15 took the assessment test (one was taking an "Incomplete" for the course, as he had not done some of the testing nor turned in lab project assignments.

6. Describe how students were selected for the assessment.

No special selection process was used – 15 of the 16 students enrolled took the assessment test.

II. Results

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.

    There were three main areas which were addressed in the assessment of 2008. Only one of the changes is still applicable to the course, because of the switch from the MCSA/MCSE to the MCTS/MCITP.

    1. _**Differentiation between User Rights and User Permissions**_. This is still applicable to the present version of this course. These differences are now reviewed three different times in the course (used to be only once) and has resulted in a significant improvement in student performance. The concept was addressed in the Assessment Test and is now no longer a problem.

2. ***Differentiation between a Print Client and a Print Server*** This is no longer part of the CNT211 course, but is now part of the CNT223 course and therefore was not addressed in the Assessment Test.

3. ***Differentiation between the various forms of RAID used for Disk Tolerance.*** This is no longer part of the CNT211 course, but is now part of the CNT224 course and therefore was not addressed in the Assessment Test

2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.

Outcome #1: Differentiate the types of Microsoft Networking Components, i.e. Domain (Client Server) vs. Peer to Peer and identify the importance and use of DNS associated with Active Directory communication.

Outcome #2: Identify the components within an Active Directory Services structure including the Schema, Global Catalog, Transitive Trusts, Forests, Trees, Domains, Organizational Units, etc. and the Tools necessary for administrating it – Active Directory Users and Computers, Active Directory Domains and Trusts, etc.

Outcome #3: Identify and configure User and Computer Accounts, identify the naming structures, the types of User Profiles as well as the various implementations of Security Groups used with Active Directory such as Universal, Global, and Domain Local..

Outcome #4 Differentiate the various types of File/Folder permissions and methods of encryption, as well as the different means of resource distribution such as publishing and sharing, plus identify the types of file system recovery including shadow copies and off-line files.

Outcome #5: Define the various implementations of group policy, including policy application order, inheritance, security control, folder redirection, running scripts, and automatic installation of software applications.

3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. ***Please attach a summary of the data collected.***

Overall Results: (Based on the Rubric)

Overall Average Score on the Test: **34.4 out of 45 questions for a 76.4 Average**. *This meets and exceeds our expectation of having a 70% overall average for the class.*

Percentage of Students achieving over a 70% average on the Test. 73% of the students, (11 of the 15) exceeded the 70% test average. *This result also exceeded our 2nd goal of having over 70% of the students score above 70%.*

The testing results included every student in the class, with the exception of one, as outlined above, from the best all the way to the worst and therefore is very representative. As far as the test results go, the same students that did poorly on the course tests, also did poorly on the assessment test as well. Considering the difficulty and highly technical nature of this advanced course, the assessment test reflected a fairly high level of understanding and retention by the students. Also, the students were given an extra five points to their semester total for just taking the assessment test which was the only effect this test had on their grade. Actually, they were told NOT to study for this assessment test, as the purpose of it was to give an indication of retention for the overall course. It should be noted however, that on the same day, students took a final test which DID count on their grade, and they therefore, hopefully, did study for. Obviously the results for the last outcome which reflected the material on the last test, had the highest average, in fact the last two outcomes (newest material) had the highest averages overall.

Attached are the results, and a breakdown by Outcome is shown below in the next section.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*

Breakdown by Outcome:

Outcome #1 - Questions 1 through 9 represented Outcome #1: Total Questions: 9

91 correct answers out of 135 questions for a **67.4% Average.** This failed to meet the 70% average for students achieving this outcome. 6 of the 15 students exceeded the 70% mark for this outcome, and 4 more of the 15 were slightly below the 70% mark, being one question away from exceeding the 70% mark for this outcome. The cause for this is discussed below.

Outcome #2 - Questions 10 through 18 represented Outcome #2: Total Questions 9

108 correct answers out of 135 questions for an **80% Average.** This was considerably above the expected 70% average for the students achieving this outcome. 8 of the 15 students exceeded the 70% mark for this outcome, and 4 more of the 15 were slightly below the 70% mark, being one question away from exceeding the 70% mark for this outcome.

Outcome #3 – Questions 19 through 27 represented Outcome #3: Total Questions 9

93 correct answers out of 135 questions for a **68.8% Average.** This failed to meet the 70% average for students achieving this outcome. 5 of the 15 students exceeded the 70% mark for this outcome, and 3 more of the 15 were slightly below the 70% mark, being one question away from exceeding the 70% mark for this outcome. The cause for this is discussed below.

Outcome #4 - Questions 28 through 36 represented Outcome #4: Total Questions 9

112 correct answers out of 135 questions for an **82.9 % Average.** This was considerably above the expected 70% average for the students achieving this outcome. 13 of the 15 students exceeded the 70% mark for this outcome with 1 more of the 15, slightly below the 70% mark, being one question away from exceeding the 70% mark for this outcome.

Outcome #5 – Questions 37 through 45 represented Outcome #5: Total Questions 9

113 correct answers out of 135 questions for an **83.7% Average.** This was considerably above the expected 70% average for the students achieving this outcome. 12 of the 15 students exceeded the 70% mark for this outcome with 1 more of the 15, slightly below the 70% mark, being one question away from exceeding the 70% mark for this outcome. It should be noted that the material from this outcome was the same material that the students were also being tested on in a separate test on the same day for a grade. Obviously they had recently studied and the material was the most fresh in their minds.

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

> Strengths: Areas of strength were in the understanding of the active directory logical structure and the terms associated with this, the understanding of the permission structure, the methods of encryption, and the use of resource sharing, publishing, and shadow copies, and in the group policy configuration and application area.
>
> Weaknesses:

Outcome #1

We were slightly below our 70% mark here, and this is largely a result of a very low score for one single question which only four people answered correctly. The question addressed a very important concept in the relationship of DNS and Active Directory – the "Integrated Zone". This is a two part/answer question, and because of its importance and need for understanding, NO partial credit is given so both selections must be correct. It emphasizes the tight interaction between the two services which is essential in understanding A.D. Replication as well as the ability to update any DNS Server on an Active Directory Domain Controller. Even though this material was presented much earlier in the course (the first week), it is important enough that students should retain the concepts well beyond completing the course.

Outcome #3

Again, the results were only slightly below the 70% mark and again, this is largely a result of a very low score for a single question which only 3 people answered correctly. This question addressed a very basic concept essential to understanding the group types used within A.D. – universal, global, and domain local. Each type has its importance and place of use and it is extremely important for students to know the difference. The exact question addressed the types of members which can be in global groups, the key point being that it can contain only members from the domain it was created in, and is used to carry those members to resources in other domains, resources which are controlled by domain local groups.

Changes to improve these weaknesses are addressed in the next section below.

III. Changes influenced by assessment results
1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.

Outcome #1

I am going to make two significant changes which will help reinforce the concept of "Integrated Zones"

- Rather than just being a "part of a discussion" of a number of things on a PowerPoint slide, a new slide will be created that covers integrated zones exclusively where the concepts will be discussed independently of other topics.
- Secondly, as this concept was previously only discussed in the first week when discussing DNS's relationships to A.D., it will be reviewed again twice more when discussing Active Directory database replication in subsequent weeks.

Outcome #3

While I already have quite a bit emphasizing the functions of each of the types of active directory security groups, it is obvious that more is needed, and therefore I am going to create an additional PowerPoint slide that will _contrast_ the _differences_ between the groups. This will come after the explanation of what each group is, and does, and will also follow the section on group interaction.

2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.

    a. ☐ Outcomes/Assessments on the Master Syllabus
       Change/rationale:

    b. ☐ Objectives/Evaluation on the Master Syllabus
       Change/rationale:

    c. ☐ Course pre-requisites on the Master Syllabus
       Change/rationale:

    d. ☐ 1st Day Handouts
       Change/rationale:

    e. ☒ Course assignments
       Change/rationale: Changes in lectures/PowerPoint will emphasize and clarify the items needing improvement.

    f. ☒ Course materials (check all that apply)
       ☐ Textbook
       ☒ Handouts (PowerPoint Presentations)
       ☒ Other: PowerPoint Presentation changes.

    g. ☐ Instructional methods
       Change/rationale:

    h. ☒ Individual lessons & activities
       Change/rationale: Again, changes in lecture will add additional material to emphasize principles associated with changes listed.

3. What is the timeline for implementing these actions?

Winter semester of 2012.

IV. Future plans
1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course.

    I feel my assessment tool and method of applying it, was effective in measuring whether the students had grasped and retained what I believe are the key concepts of the course expressed in my course outcomes. In particular, the instructions I gave to not study for the assessment, and that taking the test would only affect their grade positively, whether or not they did well on it, gave me an excellent indication of how much they had learned. Again, they had no reason to personally care about the results of this test, yet overall they did well with the very complex material covered in this course and certainly exceed my expectations. **None of the students "rushed through" this assessment test – they all took as much time with it as they took on their actual final exam, giving me the indication that they did care and what they had answered is actually what they had _retained_ from the course.** Since the test was designed and written around the concepts expressed in the course outcomes, I feel that using this type of assessment tool was successful.

2. If the assessment tools were not effective, describe the changes that will be made for future assessments.
    Not Applicable

3. Which outcomes from the master syllabus have been addressed in this report?
       All __XXXXX__ Selected _____
    If "All", provide the report date for the next full review: Every Three Years, which would be Fall 2014.

    If "Selected", provide the report date for remaining outcomes: _____.

COURSE ASSESSMENT REPORT

Submitted by:

Print: Wm Reichert   Signature _____ Date: 12/21/2011
Faculty/Preparer

Print: Clarence Hasselbach   Signature _____ Date: 1/3/2012
Department Chair

Print: Rosemary Wilson   Signature _____ Date: 1/5/12
Dean/Administrator

COURSE ASSESSMENT REPORT

I. Background Information
1. Course assessed:
    Course Discipline Code and Number: CNT211
    Course Title: Administering and Managing Microsoft Windows Server
    Division/Department Codes: 14300

2. Semester assessment was conducted (check one):
    ☒ Fall 20 _08_
    ☐ Winter 20__
    ☐ Spring/Summer 20__

3. Assessment tool(s) used: check all that apply.
    ☐ Portfolio
    ☐ Standardized test
    ☐ Other external certification/licensure exam (specify):
    ☐ Survey
    ☐ Prompt
    ☒ Departmental exam
    ☐ Capstone experience (specify):
    ☐ Other (specify):

4. Have these tools been used before?
    ☐ Yes
    ☒ No

    If yes, have the tools been altered since its last administration? If so, briefly describe changes made.
    N/A

5. Indicate the number of students assessed/total number of students enrolled in the course.
    21 enrolled, 21 Tested

6. Describe how students were selected for the assessment.
    All Students taking the Final Exam took the Separate Assessment Exam as well.

II. Results
1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.
    This is the first assessment done on this course using the Departmental Exam

2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.

Outcome #1: Identify and Configure an Active Directory Services structure within the Server 2003 Oeprating System. including DNS Configuration, and User/Group Account Control

Outcome #2: Identify the principles related to various Server Management Tools, including the Admin Pack, Computer Management, Remote Desktop, Device Manager, Task Manager, Event Viewer, Performance Monitor, and Control Panel's Device Manager/Advanced System Settings

Outcome #3: Define the various implementations of Group Policy, including Security Control, Folder Redirection, Running Scripts, and Automatic Installation of Software Applications

Outcome #4: Distinguish the various methods of Printer Configurations including Local and Network, and the various Printer implementations such as Priorities, Scheduling, and Pooling.

Outcome #5: Identify and Configure various Hard Disk Configurations including Disk Quota, Distributed File System, and Disk Management, including various forms of Software RAID..

3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. *Please attach a summary of the data collected.*

Overall Results: Average Score 31.7 out of 38 questions for an 83.4 % Average. <u>This meets and exceeds my expectation of having a 75% overall average for the class.</u>

I am very pleased with the results, in fact, as will be shown below, the differential between the highest Outcome and lowest Outcome percentages was only 7%, (88% vs 81%), which shows great balance in material presentation by the instructor, as well as understanding, and retention by the students. The students were getting extra points just for taking the test (the test results had no effect on the grade), so that the only "incentive" they had to do well was my urging them to do so as the results would help improve the course. In fact, I told them NOT to study for the test, as the test addressed key concepts which I hoped they would have retained without special memorization, etc. The average on this assessment test was somewhat higher than the test averages for the course which was just over 77% overall.

Actually, the material which tested with the lowest percentage Outcome (81%) did, in fact, correlate with the lowest results for the same material during the regular course testing (72%), as did the highest assessment percentage outcome correlate with the highest regular course testing: 88% vs 80%). The other outcomes tested approximately the same as the regular course testing.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*

The Standard of success used was a percentage of 75% correct answers for each of the Outcomes. In all five Outcomes, this was achieved with an overall average, as pointed out above, of 83.4 %.

Look at success rate by student population,   16 of the 21 students taking the test scored higher than 75%. Three of the remaining 5 scored 71%, one was at 68%, and one at 63%. This means 16/21 that 76% of the students scored over the 75% mark, and with an overall average of 83%, most scored considerably higher than that.

Breakdown by Outcome:

Outcome #1

Questions 1 through 8 represented Outcome #1. Total Questions: 8
140 correct answers out of 168 questions for an **83.3% Average.** This was considerably above the expected 75% average for the students achieving this outcome. 16 of the 21 students taking the test exceeded 75%. for this outcome.
Individual questions not achieving a 50% Success Rate: None

Outcome #2

Questions 9 through 14 represented Outcome #2. Total Questions: 6
112 correct answers out of 126 questions for an **88.8% Average.** This was considerably above the expected 75% average for the students achieving this outcome. 18 of the 21 students taking the test exceeded 75% for this outcome.
Individual questions not achieving a 50% Success Rate: None

Outcome #3

Questions 15 through 22 represented Outcome #3. Total Questions:8
137 correct answers out of 168 questions for an **81.5% Average.** This was considerably above the expected 75% average for the students achieving this outcome. 16 of the 21 students taking the test exceeded 75% for this outcome.
Individual questions not achieving a 50% Success Rate: None

Outcome #4

Questions 23 through 29 represented Outcome #4. Total Questions: 7
122 correct answers out of 147 questions for an **82.9% Average.** This was considerably above the expected 75% average for the students achieving this outcome. 12 of 21 students taking the test exceeded 75% for this outcome. This is misleading to some extent, as 6 of the remaining 9 had 5 out of 7 or 72% - just below the 75% which is 5.25 questions correct. The remaining three students were below that.
Individual questions not achieving a 50% Success Rate: None

Outcome #5

Questions 30 through 38 represented Outcome #5. Total Questions: 9
156 correct answers out of 189 questions for an **82.5% Average.** This was considerably above the expected 75% average for the students achieving this out come. 18 of 21 students taking the test exceeding 75% for this outcome.
Individual questions not achieving a 50% Success Rate: One.

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

Strengths: The overall average for all Outcomes was relatively very close indicating that students were actually very strong in all areas – Active Directory Administration, Server Management, Group Policy implementation, Printer Configuration, and Disk Management Activities.

Weaknesses: Looking at the most missed questions, only one exceeded the 50% missed mark established in our Rubric, however two other questions were missed by almost half of the class. The question exceeding the 50% mark was in Outcome #5 and described the type of RAID used for mirroring hard disks. To be honest I was absolutely amazed that this was a highly missed question. The other two questions dealt with the use of **User Rights** in Windows (Outcome #1), and with the difference between being a Print Server and a Print Client (Outcome #4. All three of these questions will be discussed in more detail below.

III. Changes influenced by assessment results
1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.

Outcome #1 The order and definition of Security Controls used with Windows Server will be emphasized to a much greater extent, with improved explanation for each, in particular, User Rights, which allow _functionality._ Students seem to have a hard time differentiating Rights from Permissions which allow _access_.

Outcome #4 Although the difference between being a Print Client and a Print Server was emphasized highly in lecture and in the lab projects, contrasting these will be addressed in greater detail in the upcoming lectures. The key concept differentiating them does not seem to be totally grasped by the students – that of directly communicating with the Printer (Print Server), and only communicating with another computer that is acting as the Print Server, (Print Client). The problem lies, I think, with student confusion since, in most cases when printing at home etc., the computer is actually acting as both.

Outcome #5 I have a really hard time believing that over half the students did not know that mirroring disks is defined as RAID 1. The lecture goes into this in great detail, as well as the lab project where they create their own mirrored disks. I have reviewed the test results and have found that _every student(all 12 of them) missing this question choose RAID 0 (Stripping) as their answer. Obviously I have to differentiate better between RAID 0 and RAID 1which I will do in Lecture, and will in the lab project where basically stripping and mirroring are the terms used for each project add (RAID 1) and (RAID 0) to further emphasize the differences._

2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.

    a. ☐ Outcomes/Assessments on the Master Syllabus
       Change/rationale:

    b. ☐ Objectives/Evaluation on the Master Syllabus
       Change/rationale:

    c. ☐ Course pre-requisites on the Master Syllabus
       Change/rationale:

    d. ☐ 1st Day Handouts
       Change/rationale:

    e. ☐ Course assignments
       Change/rationale:

    f. ☒ Course materials (check all that apply)
       ☐ Textbook
       ☒ Handouts
       ☒ Other: Both Lecture Notes and Lab Projects will be modified as outlined under improvement above.

    g. ☒ Instructional methods
       Change/rationale: In lecture, I will spend more time defining and contrasting User Rights with other User Security Controls. Also I will better contrast Print Server/Print Client relationships, and will, of course, spend more time on comparing Stripping RAID 0, with Mirroring RAID 1 so that there is no confusion existing between the two.

    h. ☒ Individual lessons & activities
       Change/rationale: As mentioned, the lab project on Stripping and Mirroring will be altered slightly to use the RAID terms associated with each activity rather than just referring to "Stripping" or "Mirroring".

    i. ☒ Review of the Most Missed Questions (less than 50% of the class had the correct answer.

The one question which falls into this category was the question concerning Mirroring of Disks and the associated term for this which is RAID 1. Eight of the students answered it correctly, 12 of the students **all had the same wrong answer – RAID 0.** It is obvious that during lecture and lab I did not differentiate the differences between these two forms of RAID sufficiently. This will be corrected, both in Lecture where I will specifically contrast them, and in the Lab Project where I will make the changes as detailed earlier.

3. What is the timeline for implementing these actions?

These changes will be implemented in the Winter 2008 semester.

COURSE ASSESSMENT REPORT

IV. Future plans

1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course.

   I feel my assessment tool and method of applying it, were effective in measuring whether the students had grasped and retained what I believe are the key concepts of the course expressed in my Course Outcomes. In particular, the instructions I gave to not study specifically for the assessment, and that taking the test would only affect their grade positively, whether or not they did well on it, gave me and excellent indication of how much they had learned. Again, they had no reason to personally care about the results of this test, yet on the whole they did exceptionally well with the very complex material covered in this course and certainly exceeded my expectations. **None of the students "Rushed through" this assessment test – they all took as much time with it as they took on their actual Final Exam, giving me the indication that they did care and what they had answered is actually what they had _Retained_ from the course.** Since the test was designed and written around the concepts expressed in the Course Outcomes, I feel that it was this tool was a total success.

2. If the assessment tools were not effective, describe the changes that will be made for future assessments.
   Not Applicable.

3. Which outcomes from the master syllabus have been addressed in this report?
   All _XXXXX_   Selected _____

   If "All", provide the report date for the next full review:

   Every three years which would be the Fall of 2011 – I would like to do these more often, however due to the _extremely complex Curriculum and Assessment Process_ used at this school, and the number of courses which have to be processed by myself, it is an impossibility to do it at any greater frequency.

   If "Selected", provide the report date for remaining outcomes:
   Not Applicable.

Submitted by:

Print: William Reicheut   Signature _____   Date: 12/28/08
Faculty/Preparer

Print: Gary Downen   Signature _____   Date: 1/12/08
Department Chair

Print: _____   Signature _____   Date: 1/13/08
Dean/Administrator

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Approved by the Assessment Committee 11//08