Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Computer Networking Technology	224	CNT 224 05/20/2016-Configuring Advanced Windows Server 2012 Services
Division	Department	Faculty Preparer
Business and Computer Technologies	Computer Instruction	William Reichert
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Identify various advanced configurations and properties for DHCP/DNS services as well as Network Load Balancing Concepts, contrasting them with Fail-over Clustering, and implementing them in a Web Server environment.

- Assessment Plan

    o Assessment Tool: Written Exam specifically created for the assessment.

    o Assessment Date: Fall 2017

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

    o Number students to be assessed: 20 - 40

    o How the assessment will be scored: 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 respective 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 in the assessment test. Outcome success: average of all student scores for each particular outcome's part of the test equalto or exceed 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)
	2016	

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

# of students enrolled	# of students assessed
15	14

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.

One of the students dropped the course mid-way through the semester, so could not be included in the overall assessment testing. All students that finished the course were included in the assessment.

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 was only one section of the course offered during this semester, so every student that finished was included - the ones that did well as well as those not as proficient to give balanced results on the course effectiveness.

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

Since there were five outcomes, a 40-question test was developed with eight multiple-choice questions for each outcome. These questions reflected key concepts involved with achieving the outcome as stated above - in other words, questions that would show that the student had a good understanding of these key points. The answers were scored as either correct or incorrect for each of the 14 students.

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

There were four methods of measuring success - each is shown below with the results. The first percentage shown is the goal for success, the 2nd is the actual result from the testing.

Overall Average of all students for the test as a whole   70%   Results 30/40 = 75%

Percent of Students for whole test having an average of 70% Results 11/14 = 78%

Overall Average of all students for this outcome   70 %   Results 80/112 = 71.4%

Percent of students for this outcome having achieving 70% Results 10/14 = 71.4%

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

Areas in which 70% or more of the students answered questions correctly associated with the objectives in this outcome:

1. DHCP Superscopes and Multinets

2. DHCP Troubleshooting

3. DNS Service Records

4. Advanced DNS Options

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.

Objectives within the Outcome of which less that 70% of the students reached:

1. Use of Global Names Zone with DNS - This area was missed by more than half the students - as part of "continuous improvement", the plan is to review this topic later in the course a 2nd time - even though this advanced topic was covered both in the lectures as well as part of a lab project, it was covered very early in the course. Since students were to do NO special preparation for the assessment, expecting a majority of them to remember this complex topic over the whole semester seems to have been an unrealistic assumption.

2. Slightly less that 70% did not remember the use of the IPCONFIG command for flushing/displaying the DNS Cache - this is very surprising, as we continuously used this tool throughout the semester, however more so in the early parts. A review of all the DNS troubleshooting tools towards the end of the semester is also indicated for "continuous improvement".

Outcome 2: Define the implementation of the various forms of Windows Server Backup including basic file backup as well as Disaster Recovery Concepts including complete

Operating System Recovery as well as distinguish the different capabilities of Certificate Server, including installation, configuration, and management of certificates.

- Assessment Plan

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    o Assessment Date: Fall 2017

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    o How the assessment will be scored: 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 respective objectives.

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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.

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> Overall Average of all students for this outcome   70 % Results 82/112 =73.2%
>
> Percent of students for this outcome having achieving 70% Results 8/14 =57.1%

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

> Areas in which 70% or more of the students answered questions correctly associated with the objectives in this outcome:
>
> 1. Symmetrical Encryption

2. Insurance of Certificate Trust

3. Certificate Revocation Lists

4. Single Purpose Certificates

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.

Objectives within the outcome of which less that 70% of the students reached:

This is one of the two outcomes where not more than 70% of the students achieved 70%. When the number of students are low (14), a difference of only two (in this case) can drop that percentage quickly by 70%. However, this outcome had one area (objective), which, if improved on itself, would have dramatically made a difference.

1. The Web process for use of SSL certificates between a Web Client and a Web Server, including the encryption keys, etc. is one of the more important concepts in the Certificates part of the course, and the question describing this process was the most one missed. Therefore, in both Lectures and Labs, the plan will be to reinforce this concept a number of times to insure the students fully comprehend it.

2. Two other objectives which could use improvement where slightly less than 70% answered the appropriate questions were Types of Cryptography and the differences between the standard Certificate Server Installation and the Enterprise one. Lectures concerning these concepts will also be reinforced.

Outcome 3: Recognize various types of IIS virtual Web Servers using Microsoft Windows Server, and identify the uses of Windows Terminal Services, including Remote Desktop and Application Services.

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Overall Average of all students for this outcome   70 % Results 86/112 =76.7%

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

Areas in which 70% or more of the students answered questions correctly associated with the objectives in this outcome:

1. Dynamic Updates

2. Network Load Balance Concepts, Configuration, and Implementation

3. Windows Backup Types

4. Windows Shadow Copy Service

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.

Objectives within the Outcome of which less that 70% of the students reached:

One area associated with this outcome can use some "continuous improvement" as slightly less than 70% of the students seem to understand the concept. This had to do with the types of file systems which can be used with the Windows Backup Program. Lectures on the use of ONLY the NTFS file system with the Windows Backup Program will be reemphasized.

Outcome 4: Identify the implementation of Advanced Active Directory concepts including Sites, Site Links, Inter-site Domain Replication, FSMO Roles, Functional Levels, and distinguish the different types of A.D. trusts including Cross Forest and External Trusts.

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  - Assessment Date: Fall 2017

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> Overall Average of all students for this outcome   70 % Results 91/112 =81.2%
>
> Percent of students for this outcome having achieving 70% Results 11/14 =78.5%

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

> Areas in which 70% or more of the students answered questions correctly associated with the objectives in this outcome:
>
> 1. Active Directory Trust Relationships

2. Tree concepts within Active Directory

3. Active Directory Logical and Physical concepts

4. Migration Techniques with Virtual Machines

5. Use of Replicas with Virtual Machines

6. Use of Application Servers in the Cloud

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.

Objectives within the Outcome of which less that 70% of the students reached:

1. Slightly less than 70% of the students had problems with understanding the different techniques used to reach the Cloud (VPN's, RDP, etc.) and their relationship to each other. When doing both the Cloud lecture and lab, these will be reinforced.

Outcome 5: Define the different types of Advanced File Services including ISCSI, BranchCache, Dynamic Access Control, Rights Management and Federation Services.

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Percent of Students for whole test having an average of 70% Results 11/14=73.2%

Overall Average of all students for this outcome   70 %   Results 82/112=73.2%

Percent of students for this outcome having achieving 70% Results 8/14=57.1%

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

Areas in which 70% or more of the students answered questions correctly associated with the objectives in this outcome:

1. Branch Caching Concepts

2, Relationship of Dynamic Access Permissions to Share and NTFS Permissions.

3. Federation Services concepts

4. Spanned Volume concepts and it's relationship with Striping

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.

Objectives within the Outcome of which less than 70% of the students reached:

1. A major objective in this outcome which was not met was a total understanding of the various forms of RAID, 0, 1, 2, 3, 4, and 5. From both the lecture and lab it was thought that there had been enough material to differentiate these, but obviously this will require further emphasis as part of "continuous improvement" which will be provided. Even though this was earlier in the course, these basic concepts should have been grasped AND RETAINED by a larger percentage of the students.

Another objective which also needs improvement is:

2. Rights Management Service - here less than 70% didn't remember that this advanced concept is associated with the Security of APPLICATIONS. Again, this will have to be emphasized more strongly in the lecture section of the course - one

reason why this was probably not grasped as strongly is that there was no lab project associated with it.

II. Course Summary and Action Plans Based on Assessment Results

1. 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?

It is felt that this course met the needs of the students and I was surprised that actually they did overall as well as they did. There was an overall average of 70% in each of the five outcomes, and 75% overall for the course. 11 of 14 students achieved over 70% on the test as well. The three that didn't had problems all semester, largely because they just didn't study, either because of jobs and family or because of not having good study habits.

There were a number of students that were taking CNT223 Server Administration and CNT224 Advanced Server Administration at the same time, and generally they did well in both. However, the ones that took the courses in separate semesters on the whole definitely did better overall in both courses. This fact was very apparent, and will be a fact that will be used when counseling students in the future.

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

The information provided in this assessment report, including the results, the conclusions, and the action plans will be shared with all other department faculty in our regularly scheduled department meetings when assessment results are on the agenda.

3.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	Three changes addressing weak objectives in the outcomes will be part of the Actiion Plan.	The Web Certificate process is so important in today's world that we need to give it increased emphasis. With the "Cloud" becoming	2017

	1. Web Certificate Process - The certificate server section of the course covers two weeks already, but the plan is to decrease lecture emphasis on some of the less important areas, and expand coverage of the SSL (HTTPS) process between client machines and Web Servers which hold the certificates.

2. Global Name Zones - The understanding of the use of single names in a DNS enviroment (as suffixes are often appending automatically) will be reemphasized - in fact we will be switching Primary/Connection specific suffixes into this course from CNT223 to mate it up with Dynamic Updates in CNT224 since they are tied so closely together. They should have been in the same course together originally. This will help the | so important, and encryption being used in communication with it, the understanding of the whole HTTPS/SSL process by students is essential.

Understanding the use of single names with the Global Name Zones in a multi-Domain Active Directory environment is essential as Active Directory in large companies spread throughout the world has been expanded greatly in the last five years. Being able to use single names to reach remote domains can be very helpful to users.

Cloud storage using various forms of RAID fault tolerance has exploded in the past five years, and we are only starting to touch the surface. Therefore, all students should have a well grounded | |

	understanding of both topics. 3. Fault Tolerant Storage (RAID) is actually in two courses, CNT211, as well as this course. The lecture already covers each form of RAID, however, there really is no contrast or comparing of the different types. The Action Plan will add these comparisons directly into the lecture. The lab already emphasizes the differences, but the additional comparisions should improve student retention.	foundation in these concepts.	

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

> 5.

III. Attached Files

Assessment Analysis
Assessment Test

Faculty/Preparer:	William Reichert	**Date:** 05/20/2016
Department Chair:	John Trame	**Date:** 06/14/2016
Dean:	Kimberly Hurns	**Date:** 06/22/2016
Assessment Committee Chair:	Michelle Garey	**Date:** 08/03/2016