

# Washtenaw Community College Comprehensive Report

## CST 120 Command Line Fundamentals Effective Term: Fall 2024

### Course Cover

**College:** Business and Computer Technologies  
**Division:** Business and Computer Technologies  
**Department:** Computer Science & Information Technology  
**Discipline:** Computer Systems Technology  
**Course Number:** 120  
**Org Number:** 13400  
**Full Course Title:** Command Line Fundamentals  
**Transcript Title:** Command Line Fundamentals  
**Is Consultation with other department(s) required:** No  
**Publish in the Following:** College Catalog , Time Schedule , Web Page  
**Reason for Submission:** Three Year Review / Assessment Report  
**Change Information:**

**Consultation with all departments affected by this course is required.**

**Course title**

**Course description**

**Credit hours**

**Total Contact Hours**

**Pre-requisite, co-requisite, or enrollment restrictions**

**Outcomes/Assessment**

**Objectives/Evaluation**

**Rationale:** Updating master syllabus based on assessment results and industry needs: In discussion and review with our advisory board and relevant faculty, all feel that although the course content and exercises are brought up to current levels of technology (a much-needed upgrade), much more is needed in the way of additional content. It is not possible to implement all of the material needed for today's entry-level positions in a two-credit hour course. This is due to significant advances in the administrative functions of the Windows command line and more demanding PowerShell utilizations over the past couple of decades, something that did not exist when this course was originally created. Not to mention that floppy disks are not utilized any longer and the previous version of this course (revised last year) used them. This course uses the same contact hours as it did 23 years ago while the Microsoft operating systems exploded with functionality. Basically, students do not have enough exposure to make them proficient and are experiencing a disconnect between the Microsoft and Linux command line courses and need stronger foundations and experiences in both scripts and command line fundamentals.

**Proposed Start Semester:** Fall 2024

**Course Description:** In this course, students are introduced to the Windows command line used by system users and network administrators. Students will learn Windows internal and external commands by implementing them to satisfy various challenges or tasks. This will include the proper use of the command line, command syntax, parameters, and switches. Activities will also cover redirection, understanding error messages, file types, file/directory structures, and batch file creation. Students will also be introduced to the use of PowerShell and basic Linux commands as well as the differences between the two operating systems. The title of this course was previously Microsoft Command Line Fundamentals. This course contains material previously taught in CST 118.

### Course Credit Hours

**Variable hours:** No

**Credits:** 3

**Lecture Hours: Instructor: 45 Student: 45**

**Lab: Instructor: 0 Student: 0**

**Clinical: Instructor: 0 Student: 0**

**Total Contact Hours: Instructor: 45 Student: 45**

**Repeatable for Credit: NO**

**Grading Methods: Letter Grades**

**Audit**

**Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)**

### **College-Level Reading and Writing**

College-level Reading & Writing

### **College-Level Math**

No Level Required

### **Requisites**

### **General Education**

#### **Degree Attributes**

High School articulation approved

### **Request Course Transfer**

#### **Proposed For:**

Eastern Michigan University

### **Student Learning Outcomes**

1. Identify various operating system commands that demonstrate their functionality.

#### **Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Winter 2027

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.

Who will score and analyze the data: Departmental faculty

2. Distinguish folder and file system organizational methods by setting up logical folder structures, and incorporate an understanding of PATH and its relationship to this structure.

#### **Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Winter 2027

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.

Who will score and analyze the data: Departmental faculty

3. Create a functional batch file using the command line for a given operating system.

#### **Assessment 1**

Assessment Tool: Outcome-related batch file

Assessment Date: Winter 2027

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

4. Identify and configure basic system functions using basic commands in Windows, Linux and PowerShell.

#### **Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Winter 2027

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.

Who will score and analyze the data: Departmental faculty

### **Course Objectives**

1. Identify various Windows internal and external commands, detailing the difference between the two types.
2. Demonstrate proficiency in the use of the command line, using the proper syntax, parameters and switches with the various commands.
3. Define the various types of command line redirection, both input and output, and describe file to device redirection, device to file and command to command.
4. Demonstrate how to invoke HELP feature in Windows, Linux and PowerShell commands.
5. Distinguish the different file types used in the Windows operating system, including such as .bat and .exe.
6. Demonstrate the use of the SET, IF, ERRORLEVEL and GOTO functions in a batch file.
7. Demonstrate how to access and update the Windows registry using the command line.
8. Demonstrate proficiency in the use of commands to compare, copy, move, rename, find and delete files.
9. Identify the role and function of "Path" - both in keeping track of files on the disk, and how external commands are located and executed.
10. Identify the relative commands used to locate and open files in the Linux operating system.
11. Demonstrate how to invoke and run Windows PowerShell and PowerShell ISE.
12. Identify and describe the main differences between Windows and various Linux operating systems.
13. Demonstrate how to locate hidden, system and read-only operating system files and how to modify their attributes.
14. Describe the concepts of Type I and Type II hypervisors and how they are used in operating system environments.
15. Describe the Windows operating system boot process, including the Pre-boot, Boot Loader and Kernel phases.
16. Create and test a Linux Virtual Machine and demonstrate how to initialize and run it.
17. Categorize batch file-specific Windows commands (including REM, ECHO, GOTO, CHOICE, IF, FOR, CALL), associating with them their functionality and use in batch files.
18. Incorporate batch file operations such as branching and looping with the IF and GOTO statements for handling conditional processing during batch file configuration.

19. Configure batch files to incorporate user interaction during batch file processing using the PAUSE and CHOICE commands.
20. Create, configure and test various batch files, incorporating all of the functionality described in previous objectives and adding such advanced tasks as creating menus and operating system configuration files.
21. Identify PowerShell Commands associated with the Windows commands learned throughout the course, use PowerShell commands for retrieving and reporting data from a Windows Operating System and perform simple administrative functions using PowerShell.

### **New Resources for Course**

Each student should have a USB flash drive of their own for getting a copy of class lectures. USB flash drives are supplied to Students as part of Lab Projects which are returned at the end of the course.

### **Course Textbooks/Resources**

Textbooks

CDTS LLC. *Command Line Fundamentals*, 3rd or newer ed. Lulu Press, 2022, ISBN: 9 781387 4097.

Manuals

Periodicals

Software

### **Equipment/Facilities**

Level III classroom

Computer workstations/lab

Data projector/computer

<b><u>Reviewer</u></b>	<b><u>Action</u></b>	<b><u>Date</u></b>
<b>Faculty Preparer:</b> <i>James Lewis</i>	<i>Faculty Preparer</i>	<i>Apr 21, 2023</i>
<b>Department Chair/Area Director:</b> <i>Scott Shaper</i>	<i>Recommend Approval</i>	<i>Apr 25, 2023</i>
<b>Dean:</b> <i>Eva Samulski</i>	<i>Recommend Approval</i>	<i>Apr 26, 2023</i>
<b>Curriculum Committee Chair:</b> <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Aug 17, 2023</i>
<b>Assessment Committee Chair:</b> <i>Jessica Hale</i>	<i>Recommend Approval</i>	<i>Aug 28, 2023</i>
<b>Vice President for Instruction:</b> <i>Victor Vega</i>	<i>Approve</i>	<i>Aug 30, 2023</i>

## Washtenaw Community College Comprehensive Report

### CST 118 Microsoft Command Line Fundamentals Effective Term: Winter 2021

#### Course Cover

**Division:** Business and Computer Technologies  
**Department:** Computer Science & Information Technology  
**Discipline:** Computer Systems Technology  
**Course Number:** 118  
**Org Number:** 13400  
**Full Course Title:** Microsoft Command Line Fundamentals  
**Transcript Title:** MS Command Line Fundamentals  
**Is Consultation with other department(s) required:** No  
**Publish in the Following:** College Catalog , Time Schedule , Web Page  
**Reason for Submission:** Three Year Review / Assessment Report  
**Change Information:**  
    **Course description**  
    **Pre-requisite, co-requisite, or enrollment restrictions**  
    **Outcomes/Assessment**  
    **Objectives/Evaluation**

**Rationale:** There are three areas of change which are to be implemented once this three year Syllabus Review has been approved. The rationale for these changes is a result of the rapidly changing developments in the computer technology area which have made some of the existing objectives in this course either obsolete or at least in need of alteration. These include: 1. Removal of the objective dealing with disk tracks and sectors (and the associated lab project) since present day file systems and disk controllers have more than enough addressing. 2. Incorporation into the actual course an additional section on batch file programming (lecture and lab) that had been previously extra credit. With the recent changes to the Networking Degree, it was the intent to provide additional elementary programming experience in both the MS Command Line Course and the first Linux course. This additional advanced batch file section helps accomplish that purpose. 3. Expansion of the Powershell section of the Command Line course due to the elimination of the Powershell course from the Networking degree. In the present version of this course, there is one week on Powershell introduction, showing basic commands and detailing how Powershell can be used to pull all types of data from a Windows system (Lecture and Lab). One additional week will be added to allow students to perform simple administrative tasks for a Windows system such as adding users, groups, etc.

**Proposed Start Semester:** Winter 2021

**Course Description:** In this course, students use the MS-DOS command line to practice relevant commands used by network administrators. Activities include learning command syntax, parameters, redirection, error messages and file/directory structures. Networking activities include mapping drives, capturing printers, network backups, preparation of removable boot devices, batch file creation and an introduction to the use of Powershell.

#### Course Credit Hours

**Variable hours:** No  
**Credits:** 2  
**Lecture Hours: Instructor:** 30 **Student:** 30  
**Lab: Instructor:** 0 **Student:** 0  
**Clinical: Instructor:** 0 **Student:** 0

**Total Contact Hours: Instructor:** 30 **Student:** 30

**Repeatable for Credit:** NO

**Grading Methods:** Letter Grades

Audit

**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

### **College-Level Reading and Writing**

College-level Reading & Writing

### **College-Level Math**

No Level Required

### **Requisites**

**Level II Prerequisite**

CIS 100 minimum grade "C"

or equivalent computer experience

### **General Education**

**Degree Attributes**

High School articulation approved

### **Request Course Transfer**

**Proposed For:**

Eastern Michigan University

### **Student Learning Outcomes**

1. Identify various MS-DOS commands knowing their functionality, such as syntax, error messages, options, and the use of the editor and redirection in the use of multiple commands.

#### **Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Fall 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: A random sample of all students, with a minimum of one full section

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions

Who will score and analyze the data: Departmental faculty

2. Distinguish folder and file system organizational methods by setting up logical folder structures, and incorporate an understanding of PATH and its relationship to this structure.

#### **Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Fall 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: A random sample of all students, with a minimum of one full section

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions

Who will score and analyze the data: Departmental faculty

3. Define the various methods of network implementation from the command line, including establishing the communication link through a redirector, attaching to network shares or devices and performing recovery over the network.

**Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Fall 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: A random sample of all students, with a minimum of one full section

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions

Who will score and analyze the data: Departmental faculty

4. Use the DOS boot process, the necessary files and boot records to create bootable removable devices for operating system recovery purposes.

**Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Fall 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: A random sample of all students, with a minimum of one full section

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions

Who will score and analyze the data: Departmental faculty

5. Identify and implement the various commands and techniques used to create, test, implement batch file programs including evaluation of the resulting process to determine outcomes based on the structure and path through the batch file plus use Powershell commands to obtain information and perform elementary administrative tasks in a Windows system.

**Assessment 1**

Assessment Tool: Outcome-related departmental written exam questions

Assessment Date: Fall 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: A random sample of all students, with a minimum of one full section

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions

Who will score and analyze the data: Departmental faculty

**Course Objectives**

1. Identify various DOS internal/external commands, detailing the difference between the two types.
2. Demonstrate proficiency in the use of the command line, using the proper syntax, parameters and switches with the various commands.
3. Recognize and interrupt command DOS error, warning and information messages which appear during the use of the command line, and show the ability to take proper corrective action to correct the condition.
4. Define the various types of command line redirection, both input and output, and describe file to device redirection, device to file and command to command.

5. Distinguish between the different types of HELP available for using DOS commands, both from the command line and using the help program.
6. Demonstrate the use of the DOS editor in modifying configuration files, including the use of the "Alt" key with other keys, the search and replace function and copy/paste operations.
7. Distinguish the different filename conventions and limitations used with DOS, and the types and purposes of various files (executables which run programs, ACII (text) files).
8. Demonstrate the use of the DIR, FIND and SORT commands to do file searches, including the proper switches to display/filter information in various forms and from various places in the directory structure.
9. Identify the basic disk logical file system structure and relate it to the use of the format command and its switches, using this command as well as the label and vol commands in setting up and identifying file system.
10. Demonstrate proficiency in the use of commands to compare, copy, move, rename, find and delete files.
11. Identify the functions of "Path" - both in keeping track of files on the disk, and used as a TSR in locating executable files.
12. Demonstrate proficiency in attaching to the network from the command line, including accessing network file shares and capturing network printers.
13. Identify the different types of backup techniques including full, incremental, differential, copy, etc.
14. Identify and implement the commands and procedures for various types of Fault Recovery Backups including XCOPY, a file by file copy backup program, and the Ghost Imaging Process.
15. Implement the use of other DOS Fault Recovery techniques including recovery of files with UNDELETE, the use of the ATTRIB command to handle hidden files, as well as accessing the NTFS file system from DOS to backup key Windows System files.
16. Investigate the use of other file system repair/recovery utilities such as SCANDISK.
17. Identify the relationship of the motherboard BIOS and the operating system to the initial boot process.
18. Categorize the three key DOS operating system files, identifying the function of each and their relationship to each other.
19. Categorize the various DOS commands used in the two main boot configuration files, and create both of them - an Autoexec.bat and Config.sys ideally suited for use with a recovery disk.
20. Create and test a bootable floppy disk, a bootable CD ROM and a bootable USB device to be used for operating system recovery.
21. Troubleshoot and fix various boot/startup problems using the DOS operating system commands from an emergency recovery device.
22. Categorize batch file-specific DOS commands (including REM, ECHO, GOTO, CHOICE, IF, FOR, CALL), associating with them their functionality and use in batch files.
23. Incorporate batch file operations such as branching and looping with the IF and GOTO statements for handling conditional processing during batch file configuration.
24. Configure batch files to incorporate user interaction during batch file processing using the PAUSE and CHOICE commands.
25. Design batch files to handle multiple inputs using the SHIFT and GOTO commands as with the FOR in DO command.
26. Create, configure and test various batch files, incorporating all of the functionality described in previous objectives and adding such advanced tasks as creating menus and operating system configuration files.
27. Identify Powershell Commands associated with the MS-DOS commands learned throughout the course, use Powershell commands for retrieving and reporting data from a Windows Operating System and perform simple administrative functions using Powershell.

### **New Resources for Course**

Each student should have a USB flash drive of their own for getting a copy of class lectures. USB flash drives are supplied to Students as part of Lab Projects which are returned at the end of the course.

### **Course Textbooks/Resources**



**Textbooks**

Van Wolverton. *Running MS-DOS*, 6th or newer ed. Redmond, Washington 98052: Microsoft Press, 1994, ISBN: 1-55615-633-2.

**Manuals**

Downen, Gary; Reichert, William. CST 118 Command Line Lab Manual, Xanadu Publishing, 12-31-2019

**Periodicals****Software****Equipment/Facilities**

Level III classroom

Computer workstations/lab

Data projector/computer

**Reviewer****Action****Date****Faculty Preparer:**

*William Reichert*

*Faculty Preparer*

*Jun 03, 2020*

**Department Chair/Area Director:**

*Cyndi Millns*

*Recommend Approval*

*Jun 03, 2020*

**Dean:**

*Eva Samulski*

*Recommend Approval*

*Jun 24, 2020*

**Curriculum Committee Chair:**

*Lisa Veasey*

*Recommend Approval*

*Oct 16, 2020*

**Assessment Committee Chair:**

*Shawn Deron*

*Recommend Approval*

*Oct 20, 2020*

**Vice President for Instruction:**

*Kimberly Hurns*

*Approve*

*Oct 22, 2020*