

# Syllabus CMIT 135 Scripting for IT



South Portland, Maine 04106

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**Title: Scripting for IT CMIT 135**

**Total Contact Hours: 45**

**Lecture (or Lab): Lecture**

**Office Hours – Location: Zoom or Online**

**Credit Hours: 3**

**Instructor: Rebecca Test**

**Contact Information: rtest@smccme.edu**

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## Course Syllabus

### Course Description

This course introduces students to basic principles of scripting for a system administrator or cyber security professional. Multiple scripting languages will be studied with an emphasis on the practical application of using learned skills in an information technology profession. Basic programming concepts, such as variables, lists, arrays and loops will be reviewed. Best practices for documenting and writing clean code will be demonstrated. As the information technology field continues to grow, it is important for students to know how to solve a problem using command-line tools regardless of the scripting language or operating system. Students will also learn how to research an unfamiliar scripting language and write successful scripts using the logical reasoning skills introduced in this course. **Prerequisite(s):** CMIT-100, CMIT-105

### Course Objectives

- Create and define variables, lists and arrays using multiple scripting languages
- Successfully define and use control statements using multiple scripting languages
- Create Functions to solve a problem using multiple scripting languages
- Work with external input using multiple scripting languages
- Identify/characterize/define a problem using multiple scripting languages
- Research where to find resources for solving a workplace problem using multiple scripting languages
- Demonstrate basic knowledge of, and ability to use, multiple scripting languages to automate processes in information technology or cyber security
- Demonstrate an understanding of the key concepts in the implementation of common features of scripting language
- Create executable code to solve the problem using multiple scripting languages

**After successfully completing the course, the student will be able to:**

- Design and build scripts utilizing multiple scripting languages to perform simple pen tests
- Automate common system administration tasks using multiple scripting languages
- Demonstrate the correct use of loops and flow control statements
- Take input from various sources and accurately define variables within a script
- Schedule a task using a scripting language

**Topical Outline of Instruction**

The following schedule of lecture topics and reading/homework assignments is preliminary and **may be changed as the semester progresses depending on availability of the VMware infrastructure and online resources**. Labs may also be altered to accommodate the online and Zoom schedule this semester. **Please review the assignments on Brightspace several times a week**. Students are expected to have read the listed material before starting any assessments or completing the labs.

Modules	Module Topics	Readings and Assignments
Module 1	<p><b>Introduction to Bash Shell Tools:</b></p> <p>Shell Basics</p> <ul style="list-style-type: none"> <li>• Working with Files</li> <li>• Working with Directories</li> <li>• Input and Output</li> <li>• Manipulating File Attributes</li> <li>• Working with Processes</li> <li>• Working with Variables Part I</li> </ul>	<p>Orientation Brightspace</p> <p>Module Reading 1</p> <p>Lecture Videos</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 2	<p>Bash Shell Programming:</p> <ul style="list-style-type: none"> <li>• Working with Variables Part II</li> <li>• Variable Substitution</li> <li>• Matching Sets of Characters</li> <li>• Introduction Flow Control</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 2</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>

Module 3	<p>Flow Control I:</p> <ul style="list-style-type: none"> <li>• The IF Statement</li> <li>• The Case Statement</li> <li>• Introduction Loop</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 3</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 4	<p>Loops and Flow Control II:</p> <ul style="list-style-type: none"> <li>• The While Loop</li> <li>• Nesting If and While Statements</li> <li>• Validating User Input with While</li> <li>• Loop Control</li> </ul>	<p><b>Quiz 1 Modules 1-3</b></p> <p>Lecture Videos</p> <p>Module Reading 4</p> <p>Complete the Module Online Assessment</p> <p>Complete the Module Labs</p>
Module 5	<p>Functions and Practical Application:</p> <ul style="list-style-type: none"> <li>• Create and Execute Functions</li> <li>• Unsetting Functions</li> <li>• Scripting for System Administration</li> <li>• Review troubleshooting script errors</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 5</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 6	<p><b>Introduction Python:</b></p> <ul style="list-style-type: none"> <li>• Installing Python Software and Running a Python Script</li> <li>• Variables and Data Types</li> <li>• Working with User Input</li> <li>• Introduction Lists</li> <li>• Introduction Dictionaries</li> <li>• Introduction For Loop</li> </ul>	<p><b>Quiz 2 Modules 4-5</b></p> <p>Lecture Videos</p> <p>Module Reading 6</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>

<p>Module 7</p>	<p>Loops and IF Statements:</p> <ul style="list-style-type: none"> <li>• For Looping with Lists</li> <li>• IF Statements</li> <li>• IF-Else Statements</li> <li>• Nested Statements</li> <li>• Working with Files</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 7</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
<p>Module 8</p>	<p>Loop Structures II and Files:</p> <ul style="list-style-type: none"> <li>• While Loops</li> <li>• User Input</li> <li>• While Loops with Lists and Dictionaries</li> <li>• Working with Files Part II</li> </ul>	<p><b>Quiz 3 Modules 6-7</b></p> <p>Lecture Videos</p> <p>Module Reading 8</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p> <p>Complete Module Online Assessments</p>
<p>Module 9</p>	<p>Introduction Functions:</p> <ul style="list-style-type: none"> <li>• Defining a Function</li> <li>• Arguments and Parameters</li> <li>• Passing a List to a Function</li> </ul>	<p><b>Midterm Modules 1-8</b></p> <p>Lecture Videos</p> <p>Module Reading 9</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>

	<p>Introduction Classes and Practical Application:</p> <ul style="list-style-type: none"> <li>• Creating a Class</li> <li>• Using a Class</li> <li>• Instances of Classes</li> <li>• Pen Testing with Python</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 10</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 11	<p><b>Introduction PowerShell:</b></p> <p>Using command-line utilities</p> <ul style="list-style-type: none"> <li>• Using cmdlets</li> <li>• Security issues with Windows PowerShell</li> <li>• Working with the help options</li> <li>• Controlling execution of Windows PowerShell cmdlets</li> <li>• Working with Windows PowerShell Get command</li> <li>• Using PowerShell ISE to build and run simple scripts</li> </ul>	<p><b>Quiz 4 Modules 9-10</b></p> <p>Lecture Videos</p> <p>Module Reading 11</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 12	<p>PowerShell II:</p> <ul style="list-style-type: none"> <li>• Cmdlets II</li> <li>• If Statement</li> <li>• While and Do</li> <li>• System Administration with PowerShell</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 12</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>

Module 13	<p>System Administration with PowerShell II:</p> <ul style="list-style-type: none"> <li>• PowerShell System Administration II</li> <li>• Managing Services</li> <li>• Working with users</li> <li>• Input from the command-line</li> </ul>	<p>Lecture Videos</p> <p>Module Reading 13</p> <p>Complete the Module Online Assessment</p> <p>Complete the Discussion Board</p> <p>Complete the Module Labs</p>
Module 14	<p><b>Final Project:</b> System Administration with PowerShell III:</p> <ul style="list-style-type: none"> <li>• PowerShell System Administration III</li> </ul>	<p><b>Start Your Final Project</b></p> <p>Lecture Videos</p> <p>Module Reading 14</p> <p>Complete the Module Online Assessment</p> <p>Complete the Module Labs</p>
Module 15	Final Project and Study for the Final Exam	<p><b>Complete Your Final Project</b></p> <p>Study for the Final Exam</p> <p>Respond to the Discussion Board</p>
Module 16	<b>Final Exam</b>	<b>Complete the Final Exam</b>

### Course Requirements

Students will need to complete weekly readings, weekly Lab exercises, four quizzes, Discussion Board assignments, and a Midterm and Final Exam.

## Student Evaluation and Grading

A	93 - 100	C+	77 – 79
A-	90 - 92	C	73 – 76
B+	87 - 89	C-	70 – 72
B	83 - 86	D+	67 – 69
B-	80 - 82	D	63 – 66
		F	0 – 62

Measure	% of total	Basis
Lab Assignments	35	Performance on labs and Discussion Board Assignments
Quizzes	25	Percent correct
Attendance	5	Based on participation in the discussion board or in-class attendance
Final Project	15	Based on the solution to the final project
Final-Midterm Exams	20	Percent correct

Total = 100 points

### Required Computer Supplies

The student should have Internet access for class communication purposes. You will need a Windows PC/Laptop running Windows 10 or Macintosh client running a recent version of the MAC OS. Each student should purchase an InfoSec license. More information can be found on Brightspace.

### Attendance Policy Online Course

To avoid an AF as a final grade, attendance in an online course is defined as completing weekly graded work such as a test, discussion board, or assignment. If you do not complete weekly work, then you have not attended class for that week. **Online attendance grades will be based on participation in the weekly Discussion Board. If you miss 2 consecutive weeks of class work, you will be dropped from the course with an AF. If you miss 3 weeks of nonconsecutive class work, you will be dropped from the class.**

### Attendance Policy In-Person Zoom Course

In-person classes require students to attend to all Zoom meetings unless they have received permission from the instructor to miss an in-person Zoom meeting. Students registered in the Zoom classes who don't attend class will receive a zero for their attendance grade unless the absence has been excused. **If you miss 2 consecutive weeks of class, you will be dropped from the course with an AF. If you miss 3 weeks of nonconsecutive classes, you will be dropped from the course with an AF.**

**Students who arrive 7 minutes or later to class will receive a 50 percent deduction on their attendance grade unless the late arrival has been excused by the instructor.**

*If you have work commitments that conflict with this class schedule, please send me an email.*

## **Expectations**

Students are expected to engage in all discussion board/assignments. Readings/tasks should be done each week as assigned. Late work will receive a 10 percent penalty each day it is turned in beyond the due date. Please email me if you have any problems finishing the course work on time or if you need help. **I am available for assistance if you send me an email and schedule a time to assist you.** If you have difficulty with your password or accessing the SMCC network, you need to contact the SMCC IT Helpdesk. You should create a helpdesk ticket and notify your instructor of the ticket number. Note that if you wait until the end of the week to request assistance, late work will not be excused. **You should start your labs at the beginning of the week. You must notify me no later than 3 days before an assignment is due if have a technical issue with your VM that isn't related to your skill set.** You must submit a ticket to the helpdesk and send me this information to avoid a late penalty. All assignments and correspondence should be done with your SMCC account.

## **Zoom Class Requirements**

Students who attend the Zoom sessions should have the ability to listen and watch the Zoom meetings. A phone option may be available if a student is not able to connect with their laptop or desktop. Students must identify themselves when attending a Zoom meeting. This means that you should login with your real name. Use your SMCC account and when asked for a name that will be used in the class, use your first and last name. Don't use nicknames like Bugs Bunny, etc. These names will be blocked from the class.

## **Snow Day Policy**

If SMCC cancels class due to power outages or weather, Zoom classes will still meet. Please check Brightspace as there may be a modified schedule to allow students to compensate for snow removal and childcare.

## **End-of-Course Evaluation**

Students complete evaluations for each course attended at SMCC. Evaluations are submitted online and can be accessed through the student portal. Students can access the course evaluations beginning one week before the end of classes. The deadline for submission of evaluations occurs Monday at 5 p.m. following the last day of the class. You will receive an e-mail to your student e-mail account when course evaluations are available.

## **ADA Statement**

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call (207) 741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the Disability Services Coordinator, Sandra Lynham, who can be reached at 741-5923. Further information about services for students with disabilities and the accommodation process is available upon request at this number. Course policies about online testing are modified to suit each individual's accommodations.



## **The Learning Commons:**

The library, tutoring and writing centers, and reference/research assistance (typically located on the second floor of South Portland's Campus Center and in the Midcoast's LL Bean Learning Commons and Health Science Center) will be fully available online during the fall 2021 semester.

Here you can find free academic support through individually scheduled and drop in, online tutoring. You can also find information literacy/research librarians, and professional academic strategy/planning mentoring online. While the physical space of the Learning Commons will be available at this time, we can also work with you to set up zoom classrooms for small group study. Services are offered by appointment or as drop-in assistance.

To access services:

- Visit My Learning in My Maine Guide or
- Select the "tutoring needed or need help?" button if it appears inside your Brightspace course.

Whether On Site or Online, students have consistently reported that the Learning Commons is a friendly, risk-free, and helpful place to seek academic support. It has also been shown that those who make use of the Learning Commons do better in a course than those who do not. We strongly encourage you to take advantage of this valuable and enjoyable resource.

## **SMCC Pay-for-Print Policy**

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, Tutoring Services, Campus Center Lounge and technology labs). Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your account. Students can check the number of pages they have printed by using the Printing Balance tool available on SMCC computers (located in the lower right corner of the screen, near the clock). Departments with work study students who need to print documents for the department should contact the Help Desk at 741-5696 to have a special account set up. To find ways to reduce your printing charges, please go to the IT Help tab on My SMCC. If you have questions about the pay-for-printing policy or your printing charges, please contact the Help Desk at 741-5696 or send an e-mail to helpdesk@smccme.edu.

## **Refunds**

Print jobs are eligible for a refund in the event of mechanical or electronic error on the part of the printer, print server, or software used to submit the job. Jobs are not eligible for a refund in cases where the job was not set up correctly, was submitted multiple times, or the student is not satisfied with the result. To request a refund, please bring the offending print to the IT Department in the basement of the Ross Technology Center. Refunds will be granted in the form of a credit to the student's account.

## **Add-Drop Policy**

Students who drop a course during the one-week "add/drop" period in the fall and spring semesters and the first three days of summer sessions receive a 100% refund of the tuition and associated fees for that course. Please note any course that meets for less than the traditional semester length, i.e., 15 weeks, has a pro-rated add/drop period. There is no refund for non-attendance.

**Withdrawal Policy**

A student may withdraw from a course only during the semester in which s/he is registered for that course. The withdrawal period is the second through twelfth week of the Fall and Spring semesters and the second through ninth week of twelve-week Summer courses. This period is pro-rated for shorter-length courses, Usually 75 percent of course meeting times; please check with the Registration Office. To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Registration Office. This process must be completed either in person or by using SMCC e-mail accounts.

**Plagiarism Statement**

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and may require the student to complete additional work for the course. The instructor may consult with the department chair and/or the College's chief academic officer prior to making such decisions. If a student seeks to challenge an instructor's determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College's disciplinary officer for review under the procedures of the MCCS Student Code of Conduct