

Formal Evaluation and Subject Matter Expert Summary Report



Maine is IT!
INFORMATION TECHNOLOGY
A CONSORTIUM OF MAINE'S SEVEN COMMUNITY COLLEGES

CMIT140

*Submitted to Maine is IT in fulfillment of the
TAACCCT grant requirements*

*By
Emporia State University*

EMPORIA STATE
UNIVERSITY
■ INFORMATION TECHNOLOGY

June, 2017

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Developed by Anna J. Catterson, Ph.D., Emporia State University.

Course Review for: Maine is IT
Course: CMIT140: Virtualization Fundamentals
Reviewed by: Anna J. Catterson, Ph.D.
Date: May 26, 2017

Part 1: Course Review

A. Course Review & Introduction (16 points total)		
1.1 Instructions made clear how to get started and where to find various course components.	3	3
1.2 Learners are introduced to the purpose and structure of the course.	3	3
1.3 Etiquette expectations (sometimes called “netiquette”) for online discussions, email, and other forms of communication are clearly stated.	2	0
1.4 Course and or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided.	2	2
1.5 Minimum technology requirements are clearly stated and instructions for use provided.	2	0
1.6 Prerequisite knowledge in the discipline and/or any required competencies are clearly stated.	1	1
1.7 Minimum technical skills expected of the learner are clearly stated.	1	1
1.8 The self-introduction by the instructor is appropriate and is available online.	1	0
1.9 Learners are asked to introduce themselves to the class.	1	0
	Total	10
Comments:		
<p>1.1: Links to course materials would be a nice addition. Links to the textbook resources (course companion site) and other supplemental course materials is encouraged.</p> <p>1.2: The purpose and structure for the course was clearly explained in the syllabus.</p> <p>1.3: Etiquette expectations (sometimes called “netiquette”) for online discussions, email, and other forms of communication should be covered. Examples include:</p> <ul style="list-style-type: none"> • Be sensitive to the fact that there will be cultural and linguistic backgrounds, as well as different political and religious beliefs, plus just differences in general. • Use good taste when composing your responses in Discussion Forums. Swearing and profanity is also part of being sensitive to your classmates and should be avoided. Also consider that slang can be misunderstood or misinterpreted. • Don’t use all capital letters when composing your responses as this is considered “shouting” on the Internet and is regarded as impolite or aggressive. It can also be stressful on the eye when trying to read your message. • Be respectful of your others’ views and opinions. Avoid “flaming” (publicly attacking or insulting) them as this can cause hurt feelings and decrease the chances of getting all different types of points of view. • Be careful when using acronyms. If you use an acronym it is best to spell out its meaning first, then put the acronym in parentheses afterward, for example: Frequently Asked Questions (FAQs). After that you can use the acronym freely throughout your message. • Use good grammar and spelling, and avoid using text messaging shortcuts. <p>This should be added for ALL types of courses. It informs students of how they should email you and communicate with others in the class – don’t assume they know how to do this.</p>		

1.4: Some institutional policies were covered in the syllabus: Withdrawal, ADA, Add-Drop, and Plagiarism Policies were described. The Reviewer would have liked to see a link to these policies within the syllabus. Please include links to the student handbook and institutional policies. Links to ADA would be encouraged, in addition.

1.5: Technology requirements were not stated in the syllabus. The Reviewer recommends adding a section in the syllabus for these requirements (or state 'None').

1.6: Prerequisite knowledge and competencies were clearly stated in the syllabus.

1.7: Implied in the course description and mention of both pre and co-requisites.

1.8: A placeholder for the instructor's contact information is indicated in the syllabus which the Reviewer found helpful.

1.9: It is assumed this would be a discussion topic in the course OR an activity that will create a learning community in the classroom.

B. Learning Objectives & Competencies (15 points total)

2.1 The course learning objectives, or course/program competencies, describe outcomes that are measurable	3	3
2.2 The module/unit learning objectives or competencies describe outcomes that are measurable and consistent with the course-level objectives or competencies.	3	3
2.3 All learning objectives and competencies are stated clearly and written from the learner's perspective.	3	3
2.4 The relationship between learning objectives or competencies and course activities is clearly stated.	3	3
2.5 The learning objectives or competencies are suited to the level of the course.	3	3
Total		15

Comments:

2.1: The course learning objectives are clearly expressed using action-oriented verbs that support measurable activities, expectations, and competencies. The Reviewer commends these objectives. Good work mapping these to the program goals –the only recommendation would be to fix the number on the course objectives, this is confusing and students will not understand the matrix to the program goals.

2.2: The syllabus describes learning objectives using measurable language and verbs.

2.3: The course learning objectives clearly state what the learner is to accomplish by the end of the course. The Reviewer considers these to be well written.

2.4: The Reviewer noted an association between learning objectives and the course outline. A general overview of projects and activities was indicated, but more detailed information relative to these course tasks would strengthen the syllabus. Include the due dates and grading evaluation tool that will be used for each. Nice work at providing this to the student PRIOR to the start of class, extremely helpful.

2.5: This assumed to be accurate. The course activities appear to support this requirement.

C. Assessment & Measurement (13 points total)

3.1 The assessments measure the stated learning objectives or competencies.	3	3
3.2 The course grading policy is stated clearly.	3	3
3.3 Specific and descriptive criteria are provided for the evaluation of learners' work and are tied to the course grading policy.	3	3
3.4 The assessment instruments selected are sequenced, varied, and suited to the learner work being assessed.	2	1
3.5 The course provides learners with multiple opportunities to track their learning progress.	2	1
<i>Total</i>		11

Comments:

3.1: Most of the assessments consist of labs, homework and exams. Each of these categories of assessments measure learning objectives. Nice work.

3.2: The grading policy/rubric is stated in the syllabus.

3.3: The Reviewer did not find any descriptive criteria associated with the grading rubric. It is recommended that this be enhanced with a description associated with each criterion.

3.4: Yes, however – how will students be assessed and when will they receive feedback? This should be made clear to the student.

3.5: Reviewer couldn't locate any evidence of tracking learning progress. (e.g., Circle back activities, mastery learning pathways, etc.) However, course activities appear to build on one another - providing scaffolding.

D. Instructional Materials (13 points total)

4.1 The instructional materials contribute to the achievement of the stated course and module/unit learning objectives or competencies.	3	3
4.2 Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.	3	2
4.3 All instructional materials used in the course are appropriately cited.	2	2
4.4 The instructional materials are current.	2	2
4.5 A variety of instructional materials is used in the course.	2	2
4.6 The distinction between required and optional materials is clearly explained.	1	1
	Total	12

Comments:

4.1: The instructional materials aligns with the course and unit objectives stated in the syllabus. The textbook has a companion site that reviewer suggests placing into the course or offer the e-book alternative: <http://www.ebooks.com/821849/virtualization-essentials/portnoy-matthew/>.

4.2: The purpose of the instructional materials in the course is not fully explained in each unit assignment. The Reviewer recommends enhancing this language to include alignment with the certification.

4.3: The instructional materials were properly cited.

4.4: The instructional materials are current.

4.5: The instructional materials by unit and assignment.

4.6: Optional materials are not part of this course.

E. Course Activities and Learner Interaction (11 points total)

5.1 The learning activities promote the achievement of the stated learning objectives or competencies.	3	3
5.2 Learning activities provide opportunities for interaction that support active learning.	3	3
5.3 The instructor's plan for classroom response time and feedback on assignments is clearly stated.	3	0
5.4 The requirements for learner interaction are clearly stated.	2	0
Total		6

Comments:

5.1: The learning activities directly support the course/unit learning objectives.

5.2: There are opportunities for interactive learning. This is a theory/lab course with significant opportunity for students to gain knowledge through hands-on activities.

5.3: A plan for feedback is not specified in the syllabus.

5.4: Requirements for expected learner interaction are not clearly specified.

F. Course Technology (10 points total)

6.1 The tools used in the course support the learning objectives and competencies.	3	3
6.2 Course tools promote learner engagement and active learning.	3	3
6.3 Technologies required in the course are readily obtainable.	2	2
6.4 The course technologies are current.	1	1
6.5 Links are provided to privacy policies for all external tools required in the course.	1	0
Total		9

Comments:

6.1: The tools in the course appear to support the unit/weekly objectives.

6.2: The tools in the course appear to support active learning.

6.3: The tools will mostly be provided by the college and through independent resources.

6.4: The course technologies are current and up-to-date for the required work.

6.5: The Reviewer was unable to locate information or links to privacy policies (eg, FERPA, etc.) Consider including that language in the course syllabus and link to the institution privacy web site

G. Learner Support (9 points total)

7.1 The course instructions articulate or link to a clear description of the technical support offered and how to obtain it.	3	0
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	3	2
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	2	0
7.4 Course instructions articulate or link to an explanation of how the institution's student support services and resources can help learners succeed in the course and how learners can obtain them.	1	0
Total		2

Comments:

7.1: Providing students access to technology support is very important. Don't assume that students know how to obtain support from the institution. Provide instructions/links for students to access the technology help services available to them.

7.2: The syllabus contains an excerpt from the institution website pertaining to accessibility. Consider providing a link to the site or instructions for students to access the services. Currently, a link placeholder is provided.

7.3: Access to the institutional academic support services is critical. Consider providing instructions/links to tutoring and other academic support services.

7.4: As with academic support, student wellness and support is also critical. Consider providing instructions/links to the institutional student support services. These might include tutoring services, the Writing Center, Technical Support, etc.

H. Accessibility and Usability (12 points total)

8.1 Course navigation facilitates ease of use.	3	3
8.2 Information is provided about the accessibility of all technologies required in the course.	3	2
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	2	2
8.4 The course design facilitates readability.	2	2
8.5 Course multimedia facilitate ease of use.	2	2
Total		11

Comments:

8.1: Yes, the order and structure of the course is well facilitated.

8.2: This could be strengthened to include information specific to students with physical or learning disabilities.

8.3: The Americans with Disabilities Act requires institutions to make accommodations for student who identify as having a disability. Work closely with your institution's office for disability services to identify resources to assist in making your course ADA compliant. The Reviewer assumes this has been considered.

8.4: Yes

8.5: Implied. Ensure content, such as videos, are easy accessed and include either 1) captioning and/or 2) a transcript.

Part II: Employment Data

Stakeholder Involvement and Employment Opportunities

Items Reviewed include:

- Internships, Job Shadowing Opportunities that exist with the outcomes and objectives with this course.
- Employment opportunities for these skills.
- Outcomes/Objectives are current and relate to job market.

Findings include:

- See Subject Matter Expert review for specific feedback relative to this finding.

Part III: Creative Commons

Items Reviewed include:

- All course materials presented in Creative Commons?
- Creative Common license (including graphic) is represented on course materials.

Findings include:

- This material is licensed under the Creative Commons Attribution 4.0 International License.
- Creative Commons graphic is included on the footer.

Part IV: Subject Matter Expert (SME) Findings & Review

Course: CMIT140
Course Name: Virtualization Fundamentals
Date: May 26, 2017

Background

Funded by a \$13 million grant from the U.S. Department of Labor, *Maine is IT!* is building new educational and career pathways in information technology at all seven of Maine's community colleges. The programs funded by the grant are designed to support Maine workers eligible for the Trade Adjustment Assistance (TAA) program, un/underemployed adults, and workforce needs in Maine's growing IT sector. They have been built to serve individuals with a range of experience, from those interested in gaining basic IT skills to IT professionals looking to advance their careers through new industry certifications.

Overall Remarks and Reviewer Summary

In reviewing CMIT140 several processes and data collections tools were noted and identified. This reviewer took in account the Dynamic Skills Audit conducted in 2014-2015. Both qualitative and quantitative data was identified in the report that provides the key elements:

1. Career opportunities do exist in York County for graduates from an AAS in Information Technology or those completing a certificate program. It was also found by this reviewer that the skills mastered in CMIT140 relate to specific job openings.
2. Current job openings list specific duties that relate to CMIT140.
3. The current Advisory Board indicates CMIT140 contributes to the labor market data.

The Dynamic Skills Audit outlined the following process, which this reviewer took into consideration when compiling this the formal SME report:

1. Local industry needs were assessed through the program Advisory Board. Minutes from those Advisory Board meetings were reviewed and suggestions from the partnerships were adopted into this summary.
2. Burning Glass data was reviewed to identify themes and trends in the current job market. The Burning Glass report helped identify skills demanded by employers to curriculum outcomes and learning objectives.

A formal SME was conducted with the above reports and compiled in the next section of this report.

A. Program and Course Overview and Objectives

Items Reviewed include:

- Dynamic Skills Audit Summary Report (Academic Years 2014-2015)
- Burning Glass Labor Market Data reports (Compilation)
- Advisory Board Minutes

Findings include:

The CMIT140 course learning outcomes and objectives align with the program mission and goals. This reviewer found that the CMIT140 course has listed measurable outcomes which can be stacked and latticed. The industry sector for CMIT140 has been categorized as: *541512 Computer Systems Design Services*. (See: https://www.census.gov/svsd/www/services/sas/sas_summary/54summary.htm#sectordescription)

Those completing this course would enter the Bureau of Labor Statistics occupation classification of *S SOC:15-1152 Computer Network Support Specialists*. (See: <https://www.bls.gov/oes/current/oes151152.htm>). The reviewer finds that this classification is basically correct. The job outlook for this classification is considered “faster than average”: <https://www.bls.gov/ooh/computer-and-information-technology/computer-network-architects.htm>

The NCES CIP (Classification of Instructional Programs) is referenced as: *11.09: Computer Systems Networking and Telecommunications* (See: <https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87258>)

This is also an accurate classification.

These course objectives have been aligned to the course outline; the reviewer finds a direct correlation to the Dynamic Skills Audit and Burning Glass baseline skills as listed in the labor market data.

CMIT140 also was found to be a requirement for many current job listings. They include:

JOB SUMMARY:

Harron Communications serves over 150,000 business and residential customers in five states with advanced Video, Internet and Phone products, doing business as MetroCast Communications.

Comprehensive benefits—health, dental, vision, 401k, Paid Time Off, Holiday. Free MetroCast Service for employees living in MetroCast service areas.

Job Responsibilities:

This position is part of an on-site team of systems engineers led by the Senior Systems Engineering and Information Technology Manager who oversees the design, development, deployment and architecture of the systems and storage infrastructure at MetroCast. The role focuses on analysis, design, documentation, and deployment of virtualization technologies such as VMWare and Citrix XenServer and their supporting systems, storage, and network hardware.

- Primarily responsible for the management of MetroCast's virtualization platform, which currently utilizes VMWare. Responsibilities related to managing this platform are: creation and configuration of hypervisors and virtual machines as well as configuring and maintaining the storage, systems, and networking components that underpin the systems
- Maintain and manage several VMWare clusters with oversight of current and future capacity planning needs.
- Work with Systems Engineering and Information Technology on continuing to develop and enhance the VDI roll out
- Design, develop, and deploy systems within C7000 and C3000 HPE Blade Enclosures including Proliant BL685, BL465c, and BL460c servers as well as discrete rack mount servers
- Analyze user and application requirements to determine operating system, storage, memory, and CPU needs for both physical and virtual servers
- Assist with the management of Blade Enclosure and Blade Server firmware, operating system, and application revisions including fault isolation and analysis. Evaluation and analysis of new firmware, operating system, and applications revisions and their applicability to isolated faults and user needs
- Assist with the development, analysis, configuration, and implementation of storage architectures. This includes gathering and analysis of application and end user storage requirements and IO performance needs to determine the proper storage layouts and disaster recovery profiles
- Act as an engineering level escalation resource to the Network Operations Center (NOC) and other operations groups to assist with high level fault analysis and isolation
- Assist and contribute to the analysis, configuration, and deployment of high availability systems and storage architecture
- Participate in a 24x7 on call rotation to address escalated, network-impacting issues that cannot be addressed through initial troubleshooting by Network Operations Center (NOC) personnel by providing high level fault analysis and isolation
- Participate in a structured change management process
- Promote and exercise complete and common sense security technologies and practices
- Occasional night and weekend hours are required in order to implement changes during designated downtime windows
- Work closely with other team members on new technology and systems solutions
- Documentation of systems and application design and configuration
- Training, mentoring, and fostering the growth of fellow team members
- Providing professional support to customers, both internal and external
- Maintain, enhance and deploy new and existing software and hardware technologies within our testing lab

Job Qualifications:

- Bachelor's degree in Information Technology area or equivalent combination of training and/or experience.
- Minimum 2 years' experience required as a Systems Administrator with an emphasis on Virtualization.
- Systems Administration experience with either Windows or Linux required.
- General knowledge of networking protocols required.

- Experience with LDAP a plus.
- Experience with VMWare or competing virtualization technology required.
- Knowledge of storage system fundamentals (file systems, RAID levels, volume management, etc.) preferred.
- Experience with various block level technologies such as FC, iSCSI and SAS a plus.
- Clear and effective communication skills, both written and spoken required.
- Ability to communicate technical concepts to individuals with varied experience required.
- Ability to thrive in a dynamic, fast-paced environment.
- Ability to work under pressure with a diverse team.
- Ability to work under moderate supervision.
- Ability to conduct yourself in a professional manner and thoroughly complete tasks and responsibilities.
- Ability to lift up to 50 lbs. of information technology equipment.
- Attendance and punctuality are both essential functions of this position.

Table: Standard Reviewed Standards for Course Outcomes

Standard Reviewed	N/A	Satisfactory	Not Satisfactory
A.1 The learning outcomes are clearly stated and mapped to specific objectives and/or assignments.		X	
A.2 Prerequisites and/or any required competencies are clearly stated.		X	
A.3 Learning objectives for each course describe outcomes that are measurable.		X	
A.4 Learning objectives are appropriately designed for the level of each of the course.		X	
A.5 Instruction, activities, and assignments in courses are scaffolded from course to course, and throughout the program.		X	

A.1 – CMIT140 articulates specific learning outcomes. **

A.2 - The course prerequisites are indicated.

A.3 - Course objectives are measurable and well described.

A.4 - Learning objectives are aligned to industry standards.

A.5 – Activities are scaffolded and appear to build on one another.

B. Relevancy

Items Reviewed include:

- Dynamic Skills Audit Summary Report (Academic Years 2014-2015)
- Burning Glass Labor Market Data reports (Compilation)
- Advisory Board Minutes

Findings include:

Course competencies are relevant to students, industry, and employers. Strong evidence was found in the Dynamic Skills Audit Summary Report. Direct ties were found through interviews with stakeholders and in Advisory Board minutes.

The table that follows is a clear matrix of how the course outcomes are relevant to students, industry, and employers:

Table: Matrix of evidence-based skills mapped to students, industry, and employers

Standard Reviewed	N/A	Satisfactory	Not Satisfactory
B.1 Course competencies represent industry's expectation of the overarching knowledge, skills, and abilities that 1 st year college students should possess.		X	
B.2 Core course competencies are relevant to industry and employers.		X	
B.3 Instruction, activities, and assignment in individual courses are relevant and engaging to students.		X	

B.1 - Yes. The specific course objectives clearly represent industry expectations and also are current and relevant.

B.2 - Yes. Core competencies are relevant to industry and employers and evidence of this was verified using the Burning Glass labor market data relative to STEM occupations (<http://burning-glass.com/research/stem/>) and the Dynamic Skills Audit Summary. This Reviewer took the interview summaries from Advisory Board members, current job openings and descriptions and matched them directly to all of the listed course objectives.

B.3 – Yes. Activities and instruction defined in the course outline offer real-world application in design and modeling that are required of any person seeking employment in this field.

C. Resources & Materials

Items Reviewed include:

- Dynamic Skills Audit Summary Report (Academic Years 2014-2015)
- Burning Glass Labor Market Data reports (Compilation)
- Advisory Board Minutes

Findings include:

Instructional materials being delivered achieve stated course objectives and learning outcomes. A formal course review was conducted that address more specifically course content and instructional design processes. However, in this SME report, specific findings in this section relate specifically to the overall instructional materials which contribute to the ten specific course outcomes.

Table: Instructional materials and their direct link to course outcomes

Standard Reviewed	N/A	Satisfactory	Not Satisfactory
C.1 The instructional materials contribute to the achievement of the stated course learning		X	
C.2 The purpose of the instructional materials is clearly explained.		X	
C.3 The instructional materials present a variety of perspectives and approaches on		X	
C.4 The instructional materials are appropriately designed for the level of the course.		X	

C.1 - Yes. The course materials contribute to the achievement of the stated learning objectives, although the alignment can and should be strengthened.

C.2 - Yes. The purpose of the instructional materials was clearly explained.

C.3 - Yes. A variety of projects were identified. The reviewer recommends small group projects to satisfy particular learning outcomes.

C.4 - Yes. The rigor matches 1st year college entry students. Reviewer also noted the rigor would be acceptable for all students from all demographics.

D. Assessment & Measurement

Items Reviewed include:

- Dynamic Skills Audit Summary Report (Academic Years 2014-2015)
- Burning Glass Labor Market Data reports (Compilation)
- Advisory Board Minutes

Standard Reviewed	N/A	Satisfactory	Not Satisfactory
D.1 The course evaluation/criteria/course grading policy is stated clearly on each syllabus.		X	
D.2 Course-level assessments (those that can be delivered) measure the stated learning objectives and are consistent with course activities and resources.		X	
D.3 Specific and descriptive criteria are provided for the evaluation of students' work and participation and are tied to the course grading policy.			X
D.4 The assessment instruments (that can be delivered) are sequenced, varied, and appropriate to the content being assessed.		X	

Findings include:

Assessment strategies use established ways to measure effective learning, evaluate student progress by reference to stated learning objectives, and are designed to be integral to the learning process. The Reviewer compared and contrasted the six learning outcomes listed for CMIT140 to affect best practices in assessing student learning. Those items have been identified and listed in the table below.

Table: Measurement of effective learning

- D.1 - Yes. Grading is broken into several components and provides opportunity for a variety of course activities, including lab projects. The Reviewer applauds this variety and balance in grading.
- D.2 - Yes. This is somewhat implied. The assessments appear to align with stated course-level objectives.
- D.3 - This Reviewer did not find any specific or descriptive criteria that was provided for the evaluation of student work.
- D.4 - This Reviewer found sequenced and varied grading strategies, including labs, quizzes, and readings.