Formal Evaluation and Subject Matter Expert Summary Report

CIS228

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

By

Emporia State University

EMPORIA STATE UNIVERSITY
INFORMATION TECHNOLOGY

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EMPORIA STATE UNIVERSITY
INFORMATION TECHNOLOGY

Course Review for: Maine is IT
Course: YCCC CIS 228: Computer Forensics
Reviewed by: Mark Summey
Date: December 5, 2016

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	**2**
1.6 Prerequisite knowledge in the discipline and/or any required competencies are clearly stated.	1	**0**
1.7 Minimum technical skills expected of the learner are clearly stated.	1	**0**
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:

1.1: A link to the LMS site was provided. Consider adding instructions on how to access the course in the LMS. Consider adding the link to the actual course.

1.2: The purpose and structure for the course was explained in the syllabus.

1.3: Etiquette expectations (sometimes called "netiquette") for online discussions, email, and other forms of communication should be covered. Examples include:

- 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.

1.4: Course and institutional policies were covered in the syllabus. Reviewer found that all policies were

covered well in the syllabus. Links to student services for each policy could be an additional item added.

1.5: Technology requirements were stated in the syllabus. USB flash drive and basic computer toolkit, required elements.

1.6: Prerequisite knowledge was not addressed in the course syllabus.

1.7: Minimum skills were not addressed in the course syllabus.

1.8: Even in a face-to-face course, it is desirable to have an instructor introduction/biography available for students to access online. A short introduction with some personal information will humanize the instructor in an online course and allow students to access the information at any time in a face-to-face course. The "Secret of your success" portion of the syllabus discussed contributing to classroom discussions; so it is noted that discussions do occur – just making a link to the discussions would be helpful.

1.9: No discussion thread is provided for students to communicate, informally, with each other outside of the class meetings. Even in a face-to-face course, it is desirable to have a means for students to informally communicate with each other to share concerns and ask questions. See note from 1.8.

B. Learning Objectives & Competencies (15 points total)		
2.1 The course learning objectives, or course/program competencies, describe outcomes that are measurable	3	**0**
2.2 The module/unit learning objectives or competencies describe outcomes that are measurable and consistent with the course-level objectives or competencies.	3	**0**
2.3 All learning objectives and competencies are stated clearly and written from the learner's perspective.	3	**1**
2.4 The relationship between learning objectives or competencies and course activities is clearly stated.	3	**1**
2.5 The learning objectives or competencies are suited to the level of the course.	3	**3**
Total	5	

Comments:

2.1: The course objectives are not measurable. Instead of "Learn about careers in the field of computer forensics and investigations", it could be "Explore five careers and describe the potential impact of careers in the field of computer forensics and investigations." This allows the objective to be measurable, you can measure and define five careers, you can define and measure the term "learn". All course objectives should have a direct link to the program outcomes, as well. Reviewer recommends reviewing course objectives and defining, clear, measurable objectives that can be clearly assessed for student learning.

2.2: The learning competencies are not measurable. See note from 2.1.

2.3: The objectives are discussed only at a high level. It is desirable to get as much detail as possible for learners to understand the requirements.

2.4: The course activities clearly relate to the learning objectives. Again the relationship between competencies and activities lacks detail. The reviewer noted the Assignment lists or Table of Contents. It is suggested to correlate the assignment activities to the direct course objectives. For example, "Reach Chapter 7" listed on the table of contents, which course outcome does this apply to? Making a matrix of course outcomes to the direct assessment is a clear way to measure student assessment. While the table of contents is a good reference, the reviewer recommends a more complete table of contents that has a matrix to tie in direct learning outcomes and how they correlate with course outcomes.

2.5: The objectives are suited to the level of the course.

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	**1**
3.4 The assessment instruments selected are sequenced, varied, and suited to the learner work being assessed.	2	**2**
3.5 The course provides learners with multiple opportunities to track their learning progress.	2	**2**
Total	11	

Comments:

3.1: The assessments align with the learning objectives. Labs, Homework, Quizzes, Exams and Participation are the major categories of assessment for this course.

3.2: The grading policy is stated in the syllabus. Yes, the reviewer noted the detailed description of how to calculate a student's grade.

3.3: Descriptive criteria is not provided for each assessment. This criteria could include a rubric or simply a relationship to the course outcomes could be provided.

3.4: The assignments are varied and aligned with the objectives for each week. There are variations of assignments and a good variety for individualized student learning. The quizzes provided are short and concise; short quizzes are a good way to ensure student learning.

3.5: Weekly assignments are provided to measure learner progress.

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	**3**
4.3 All instructional materials used in the course are appropriately cited.	2	**0**
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	11	

Comments:

4.1: The instructional materials align with the unit objectives stated in the syllabus. The websites and videos provided are current and reviewer found no broken links.

4.2: The purpose of the instructional materials and their use in the course is explained and aligns with each unit assignment.

4.3: The reviewer did not locate citations for instructional materials. Reviewer suggests providing a citation list for all external resources; this is good practice.

4.4: The instructional materials are current**.**

4.5: The instructional materials vary by unit and assignment.

4.6: With the exception of Attendance, there is no mention of optional materials.

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. Class participation is mentioned in the syllabus. The use of small group activities will allow interaction among the students. An example would be assigning groups to work together on a particular activity that enables them to collectively solve a problem related to the upcoming assignment.

5.3: The syllabus has no statement as to a timetable for instructor feedback. Try to give students a reasonable timeline to expect feedback on assignments.

5.4: The requirements for class participation are not stated in the course syllabus. Learners should be informed of how they will interact with others in the course, especially if credit is given.

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 support the unit objectives. The assignments clearly state what tools/applications are needed to successfully complete the work.

6.2: The tools promote engagement and active learning. The assignments promote active student engagement by requiring interaction with the technology to build content for assignments.

6.3: The technologies are readily available.

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

6.5: Privacy policies are usually available in the software use agreement. A review of the agreement for each application required in the course will insure that student data required for the use of the software is secure. Linking to the agreements will allow students to easily access the policies.

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.

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.

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	**3**
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	2	**0**
8.4 The course design facilitates readability.	2	**2**
8.5 Course multimedia facilitate ease of use.	2	**2**
Total	**10**	

Comments:

8**.1:** Make sure navigation is easy and intuitive (minimum clicks to reach destination).

8.2: If students must download/install technology other than the LMS, make sure clear instructions are provided.

8.3: Text files, audio files, video files. Consider multiple delivery systems for course materials. 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. There are two handouts for websites and videos; both are not ADA compliant. When testing with a screen reader, the JAWS software would not open a few of the links. Ensure that you follow ADA standards and avoid bold and italics, instead use strong and emphasis. Also, a few videos did not have captioning or transcription, Federal Law states we must provide reasonable accommodations; see if captioning is an option for these videos provided.

8.4: Pay special attention to fonts, text color, and background color. Most learning management systems have a default appearance that is ADA compliant. Also, be aware that screen reader software will not recognize bold or italicized fonts. Check with your office of disability services before changing the appearance of your course.

8.5: If possible, embed the media player in the page to assure ease of access. Reduce the instances of outside links to multimedia.

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: Please refer to the SME report.

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: The syllabus indicates that all course materials other than the syllabus are subject to a copyright held by Microsoft, and thus, may not be shared in Creative Commons. The syllabus includes Creative Commons license information and the corresponding CC graphic.

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

Course: YCCC: CIS228
Course Name: Computer Forensics
Reviewed by: Anna J. Catterson, Ph.D.
Date: December 7, 2016

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 CIS128, 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 within 50 miles of YCCC 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 CIS128 relate to specific job openings.
2. Current job openings list openings for Computer Forensics under special categories: computer forensics, criminal justice, forensic science and computer science. In Rochester, NH, the United States Army Criminal Investigation Command had two positions open at the time of this review (12/7/16). Some college was listed as a requirement and the annual salary for these careers was listed between 55,000 and 60,000, annually.

- The Maine is IT! Advisory board contributed to the findings and indicated the importance of soft skills. Stated in the 2015 YCCC Advisory Board minutes “Soft skills such as analytic and critical thinking, oral and written communication and presentation skills were noted as very desirable qualities in new hires. Industry partners believed they are an integral part of any degree program.” (YCCC-Advisory-Board-Minutes, 2015) These soft skills that were address are an integral part in the employment requirements that the United States Army job listings require.

The reviewer suggests consideration of additional written and oral communication assessments in the CIS128 course. The reviewer found no direct assessments that tie to the soft sills that the Advisory Board finds to be an important component in this particular degree program.

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. Again, the Advisory Board committee has identified key soft skills that should be

incorporated into the assessments and/or course outcomes and should also be a considered as a direct tie to the program outcomes.

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 CIS228 course learning outcomes and objectives should be revised and written to have very clear, measurable correlation to the program outcomes. The outcomes were not measurable and should be revised as:

1) Explore five career opportunities in the field of computer forensics and create a resume that lists the skills learned in this course. (This is a good use of soft skills and the outcome can be measurable)
2) Prepare an oral presentation on the investigative process in computer forensics.
3) Engage and participate in weekly discussions on hardware and software tools utilized in computer forensics. (In order for outcomes to be measurable, they need clearly defined outcomes - i.e. weekly, daily, monthly, how many, to what extent).
4) Create a training module that uses structured English for others to understand digital evidence controls and how to process crime and incident scenes.
5) Create an evidentiary documentation log.
6) Conduct an investigation from obtaining evidence to preparing reports and participating as an expert witness.

The industry sector for CIS228 has been categorized as: *541519 Other computer related services*. (See: https://www.census.gov/svsd/www/services/sas/sas_summary/54summary.htm#sectordescription) The reviewer finds that this classification is correct.

Those completing this course would enter the Bureau of Labor Statistics occupation classification of *33-3021.02 Police Identification and Records Officer*. (See: https://www.onetonline.org/link/summary/33-3021.02) This is defined as: Collect evidence at crime scene, classify and identify fingerprints, and photograph evidence for use in criminal and civil cases. **Sample of reported job titles:** Crime Scene Evidence Technician, Crime Scene Investigator, Crime Scene Technician, Criminalist, Field Identification Specialist, Forensic Specialist, Identification Officer, Identification Technician, Latent Fingerprint Examiner, Latent Print Examiner.

The NCES CIP (Classification of Instructional Programs) is referenced as: *11: Computer and Information Sciences and Support Services*. (See: http://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cip=11) This is also an accurate classification.

This course was designed for 1st-year community college students or equivalent. There are no course prerequisites listed, and the exam-preparation materials provided from Microsoft begin at a very basic level.

1. Students will format the user interface by using CSS.
2. Students will code by using JavaScript.

Specific review standards are listed in the table referenced below:

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– CIS228 should articulate specific learning outcomes for the course, and those outcomes should also align with the topics of weekly activities. Reviewer did not see any connection between the learning activities and the outcomes. This can be modified by adding a matrix that illustrates the correlation between outcome and assessment. Activity-level objectives are not listed, so it is unclear how each unit contributes to the whole course.
A.2 – Previous skills and knowledge are not stated. This is an introductory course, so no prerequisite skills may be applicable, but it is recommended that this be stated more clearly in the syllabus.
A.3 - Course objectives are NOT measurable.
A.4 - Learning objectives are appropriate for an introductory course. It is suggested to revise the outcomes to make them more measurable.
A.5 – Activities appear to be scaffolded through the course, building pieces of a project each week, although this is only inferred by the reviewer and not explicitly stated. The skills mastered in this course serve as prerequisites to other computer science courses offered in the program. The course's objectives fill an industry need within the program.

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 1st year college students should possess.		X	
B.2 Core course competencies are relevant to **industry and employer**s.		X	
B.3 Instruction, activities, and assignment in individual courses are relevant and engaging to **students**.		X	

B.1 - Course objectives align with industry expectations at the appropriate skill level, as they are derived directly from the current certification exam.
B.2 - Core competencies are relevant to industry and employers, as verified using the Burning Glass labor market data (http://burning-glass.com/research/coding-skills/) and the Dynamic Skills Audit Summary. Student learning objectives align with the competencies expected of new hires in the Computer Forensics field. Reviewer suggests a partnership with the US Army; there were two openings at the time of this review and 13 openings for this particular position this year.
B.3 - Activities and instruction defined in the course table of contents are engaging, however, learners need to know what type of engagement and interaction will be expected of them. It is best practice to place this into the course syllabus.

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:

Textbook contents aligned with course objectives, although the learning activities listed in the syllabus were not described or correlated with unit-level objectives. Unit-level objectives and activity descriptions should be added to clearly show students the purpose of each assignment. The textbook is a good reference and Nelson (2014) has good examples of course outcomes that the reviewer recommends reviewing.

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 objectives.		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 the course			X
C.4 The instructional materials are appropriately designed for the level of the course.		X	

C.1 – The topics covered with the course materials clearly align with course learning objectives.
C.2 – A better explanation would be suggested.
C.3 –The technology content varies throughout the course, which would lead to a variety of activities.
C.4 – Because the materials align with appropriate course outcomes, they are a good fit for the level of course.

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

Findings include:

The only graded assessment of this zero-credit, pass/fail course is done through a certification exam. There are "On your own" scenarios listed in the syllabus. These can be assumed to serve as assignments for each unit, and they appear to align with the course outcomes, but no details are given regarding how these will be evaluated to measure progress and help students learn.

Table: Measurement of effective learning

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	

D.1 – The grading policy is clearly stated.
D.2 – The certification exam upon which the course grade will be based is consistent with course activities and resources.
D.3 – No criteria or guidance is given to let students know how their work throughout the course would be evaluated to provide feedback on their progress. The listed Scenario activities are not even labeled as "assignments." Especially if these activities will not contribute to the final grade, the purpose for each one should be made clear to students. Describing what will be done in each assignment and how it contributes to the course outcomes will serve this purpose and motivate students to complete these ungraded activities.
D.4 – The sequence of the assignments is clear, as they follow the progression of the course to build toward its outcomes. The variety of each assessment is adequate, as each activity may be procedurally-identical, although each will involve a unique technology application. It is reasonable to assume that each week's scenario activity involves creating something with that unit's listed technology, which would make each assignment appropriate to the content.