# Formal Evaluation and Subject Matter Expert Summary Report


# CIS174

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*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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**Course Review for:** Maine is IT
**Course**: CIS174 Algorithms in Programming
**Reviewed by**: Mark Summey
**Date**: 6/15/17

EMPORIA STATE UNIVERSITY
INFORMATION TECHNOLOGY

**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 | **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*** | 11 | |

**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.

1.5: Technology requirements were stated in the syllabus.

1.6: Prerequisite knowledge and competencies, if any, were not covered in the materials.

1.7: Minimum skills were covered in course materials.

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.

1.9: An introduction discussion thread is desirable for students to communicate, informally, with each other outside of the class meetings.

## 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 objective are measurable.

2.2: The module/unit learning objectives are measurable consistent with the course level competencies.

2.3: The objectives clearly state what the learner is to accomplish.

2.4: The course activities clearly relate to the learning objectives.

## 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 | **2** |
| 3.5 The course provides learners with multiple opportunities to track their learning progress. | 2 | **2** |
| ***Total*** | 13 | |

**Comments:**

3.1: The assessments align with the learning objectives.

3.2: The grading policy is stated in the syllabus.

3.3: Descriptive criteria are provided for each assessment in the course. The criteria are aligned with the grading policy.

3.4: The assignments are varied and aligned with the objectives for each unit.

3.5: Six assignments and a final project, along with quizzes 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 | **1** |
| 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 | **0** |
| ***Total*** | 11 | |

**Comments:**

4.1: The instructional materials align with the unit objectives stated in the syllabus.

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 text was cited in the course syllabus. Individual assignments do not contain citations. Consider adding the citations to the assignments.

4.4: The instructional materials are current (2016).

4.5: The instructional materials vary by unit and assignment.

4.6: No mention is made of extra credit or 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 | **2** |
| 5.4 The requirements for learner interaction are clearly stated. | 2 | **2** |
| ***Total*** | 9 | |

**Comments:**

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

5.2: There are opportunities for interactive learning. 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 states that graded materials will be returned in a timely manner. Consider elaborating on 'timely manner'. Try to give students a reasonable timeline to expect feedback on assignments. For example: I will try to respond to questions within 48 hours, or, I will try to return assignment feedback within 5 days.

5.4: The requirements for class participation are stated in the syllabus.

## 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: No outside technologies were listed in the syllabus. Since the course is face-to-face, it is assumed all technologies are present in the classroom.

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

6.5: Since this is a face-to-face course, it is assumed the technology is available in the classroom. 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 | **2** |
| 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*** | 4 | |

**Comments:**

7.1: A face-to-face course assumes that tech support is available during class meetings. 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 | **2** |
| 8.4 The course design facilitates readability. | 2 | **2** |
| 8.5 Course multimedia facilitate ease of use. | 2 | **2** |
| ***Total*** | **12** | |

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.

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:<br>• Internships, Job Shadowing Opportunities that exist with the outcomes and objectives with this course.<br>• Employment opportunities for these skills.<br>• Outcomes/Objectives are current and relate to job market. |
| |
| • See Subject Matter Expert review for specific feedback. |

**Part III: Creative Commons**

| |
|---|
| Items Reviewed include:<br>• All course materials presented in Creative Commons?<br>• Creative Common license (including graphic) is represented on course materials. |
| |
| **Findings include:**<br><br>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: CIS174
**Course Name:** Algorithms in Programming
**Reviewed by**: Mark Summey
**Date**: 6/15/17

**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 CIS174 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 CIS174 relate to specific job openings.
2. Current job openings list specific duties that relate the Algorithms in Programming course, CIS174.

There are several current job openings available for computer programmers, within an overall (as of 6/15/17) within a 50-mile radius of YCCC. A Backend Developer-Java/C++/C# is currently being sought with a software development company.
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 CIS174 course learning outcomes and objectives align with the program mission and goals. This reviewer found that the CIS174 course has listed measurable outcomes which can be stacked and latticed with other coursework. The industry sector for CIS174 has been categorized as: *541511 Computer Programming 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 *SOC:15-1131 Computer Programmers.* (See: https://www.bls.gov/soc/2010/soc151131.htm)

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. One prerequisite: Into to PC Repair

Listed course objectives include:

1. Describe the fundamental concepts of software design and analysis. (I)
2. Apply strategies for code reuse that include class hierarchies, inheritance, and polymorphism. (II-III)
3. Differentiate between the data types that are implemented by the Java Collections classes. (IV)
4. Create programming solutions that use data structures and existing libraries. (IV)
5. Construct programming solutions using a recursive algorithm. (V)
6. Apply modular design principles to create a software construction. (I-V)
7. Describe the major components of a collection class. (VI)
8. Explain how abstract data types are used to implement Java Collection classes. (II-VI)
9. Analyze the execution of searching and sorting algorithms. (VII-VIII)

The content of these course objectives aligns with the topics listed in the course syllabus, the required textbook. This alignment also correlates to items found within the Dynamic Skills Audit and Burning Glass baseline skills as listed in the labor market data.

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– CIS174 articulates specific learning outcomes for the course, and it can be seen that aspects of the course objectives align with the topics of most weekly activities, but there is no explicit connection between the broader course outcomes and the course learning activities. Activity-level objectives are not listed, so it is unclear how each unit contributes to the whole course.
A.2 – Prerequisites are listed.
A.3 - Course objectives are measurable.
A.4 - Learning objectives are appropriate for an introductory course.
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.

****Reviewer Note:** While the course outcomes are clearly stated and contain very specific measurable measures, it would also be recommended to include the program mission or goals in the course syllabus for clear assessment measuring. A deeper assessment could possibly be conducted that would match the course learning outcomes to specific program outcomes (or certificate). This would illustrate a direct impact on student learning.

## 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 | |

## 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

**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 | |

## 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 | |