Formal Evaluation and Subject Matter Expert Summary Report



INSC170

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

By

Emporia State University

EMPORIA STATE
U N I V E R S I T Y
INFORMATION TECHNOLOGY

July, 2017

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

Course Review for: Maine is IT

INSC170 – Management of Information Security Course:

Reviewed by: Anna J. Catterson, Ph.D.

June 26, 2017 Date:

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 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 2 forms of communication are clearly stated. 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. 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

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Total

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10

Comments:

- 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. The textbook is around \$90 however, there is a more affordable eBook option as well for students. Links to this would be helpful.
- **1.2:** The purpose and structure for the course was clearly explained in the course description.

1.8 The self-introduction by the instructor is appropriate and is available online.

1.9 Learners are asked to introduce themselves to the class.

- 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
 - 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.

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.

- **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. Lease include links 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	3	1
measurable		
2.2 The module/unit learning objectives or competencies describe outcomes that are measurable	3	1
and consistent with the course-level objectives or competencies.		
2.3 All learning objectives and competencies are stated clearly and written from the learner's	3	1
perspective.		
2.4 The relationship between learning objectives or competencies and course activities is clearly	3	1
stated.		
2.5 The learning objectives or competencies are suited to the level of the course.	3	3
Total	7	7

2.1: The course learning objectives need improved. Reviewer recommends using action-oriented verbs that support measurable activities, expectations, and competencies. For example, there should be both first-level and second-level outcomes and objectives. An example provided:

After successfully completing this course, the student will:

- 1) Articulate the Science of Digital Forensics.
 - a. Understand the Digital Forensics profession and Investigations (Week 1, Assignment X)
- 2) Describe Data Acquisition

a.

3) Identify Computer Forensics Tools

Mapping the second-level outcomes to the actual assignments is key. Providing this matrix will give students the opportunity to understand how the learning will be applied. Some of the assignments are not well described, for example, what is a hands-on-project? Reviewer recommends further explanation of what is required in each of these projects or at least an overview to inform the students of what to expect. Furthermore, directions or a video on how to take a screenshot via a computer, mobile device and cell phone is encouraged. Don't assume that all may understand how to do this.

- **2.2:** The syllabus describes learning objectives however, they are vague and not measurable.
- **2.3:** The course learning objectives should clearly state what the learner is to accomplish by the end of the course.
- **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.
- **2.5:** This assumed to be accurate. The course activities appear to support this requirement. Please consider providing links to Mind-Tap and the discussion board projects in the syllabus. In addition, cite the course materials at the end of the syllabus allowing students the opportunity to locate the resources in an easier fashion.

C. Assessment & Measurement (13 points total)		
3.1 The assessments measure the stated learning objectives or competencies.	3	2
3.2 The course grading policy is stated clearly.	3	2
3.3 Specific and descriptive criteria are provided for the evaluation of learners' work and are tied	3	1
to the course grading policy.		
3.4 The assessment instruments selected are sequenced, varied, and suited to the learner work	2	1
being assessed.		
3.5 The course provides learners with multiple opportunities to track their learning progress.	2	0
Total	(5

- **3.1:** Most of the assessments consist of uploading screenshots; Reviewer did find much variety and little direction was given on the assignments themselves.
- **3.2:** The grading policy/rubric is stated in the syllabus. There is a section on Student evaluation and grading and there is a specific breakdown of assignments and their value. It is also suggested and recommended to note when feedback will be received (i.e. what is the normal turn-around time on assignments?).
- **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	3	2
learning objectives or competencies.		
4.2 Both the purpose of instructional materials and how the materials are to be used for learning	3	2
activities are clearly explained.		
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	1	1

- **4.1:** The instructional materials aligns with the course and unit objectives stated in the syllabus. After looking over the textbook, Reviewer did find a companion site that would be a nice addition to the course. There is also a version in braille and for mobile devices. Information to these resources should also be made available in addition to any additional any other resources that will be used in the course (screen shot tutorials for example).
- **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	(<u> </u>

- **5.1:** The learning activities directly support the course/unit learning objectives.
- **5.2:** There are opportunities for interactive learning. The discussions are a great addition, are videos required in these discussion to make them more interactive?
- **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	ıl	9

- **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

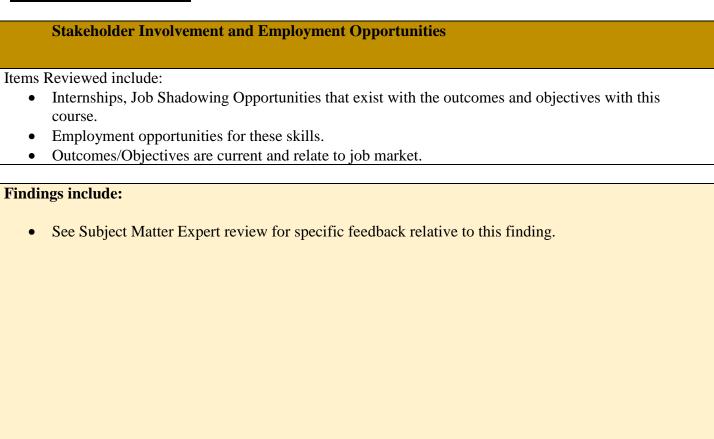
G. Learner Support (9 points total)		
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to obtain it.	3	0
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	3	2
7.3 Course instructions articulate 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	2

- **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	3	2
course.		
8.3 The course provides alternative means of access to course materials in formats that	2	2
meet the needs of diverse learners.		
8.4 The course design facilitates readability.	2	2
8.5 Course multimedia facilitate ease of use.	2	2
Total		11

- 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



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: INSC170

Course Name: Computer Forensics **Date**: June 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 INSC170 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 INSC170 relate to specific job openings.
- 2. Current job openings list specific duties that relate to INSC170.
- 3. The current Advisory Board indicates INSC170 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 INSC170 course learning outcomes and objectives align with the program mission and goals. This reviewer found that the INSC170 course has listed measurable outcomes which can be stacked and latticed. The industry sector for INSC170 has been categorized as: 518210 Data Processing, Hosting and Related Services. (See: https://www.census.gov/cgi-bin/sssd/naics/naicsrch)

This industry comprises establishments primarily engaged in providing infrastructure for hosting or data processing services. These establishments may provide specialized hosting activities, such as Web hosting, streaming services, or application hosting (except software publishing), or they may provide general timeshare mainframe facilities to clients. Data processing establishments provide complete processing and specialized reports from data supplied by clients or provide automated data processing and data entry services.

Illustrative Examples:

Application hosting
Optical scanning services
Web hosting
Computer data storage services
Analysis of data
Video and audio streaming services
Computer input preparation services
Microfilm imaging services
Computer time rental

Cross-References. Establishments primarily engaged in--

- Providing text processing and related document preparation activities--are classified in Industry <u>561410</u>, Document Preparation Services;
- Providing on-site management and operation of a client's data processing facilities--are classified in U.S. Industry 541513, Computer Facilities Management Services;
- Software design, development, and publishing, or software publishing only--are classified in Industry 511210, Software Publishers;
- Providing wired broadband Internet access services using own operated telecommunications infrastructure, in combination with Web hosting--are classified in U.S. Industry <u>517311</u>, Wired Telecommunications Carriers;
- Providing Internet access via client-supplied telecommunications connections in combination with Web hosting--are classified in U.S. Industry 517919, All Other Telecommunications;
- Operating Web search portals--are classified in Industry <u>519130</u>, Internet Publishing and Broadcasting and Web Search Portals;

- Providing access to computers and office equipment, as well as other office support services--are classified in Industry 56143, Business Service Centers;
- Processing financial transactions, such as credit card transactions--are classified in Industry <u>522320</u>, Financial Transactions Processing, Reserve, and Clearinghouse Activities; and
- Providing payroll processing services--are classified in U.S. Industry 541214, Payroll Services.

2007 NAI		2012 NAICS	2017 NAICS	Corresponding Index Entries
5182	210	518210	518210	Application hosting
5182	210	518210	518210	Automated data processing services
5182	210	518210	518210	Computer data storage services
5182	210	518210	518210	Computer input preparation services
5182	210	518210	518210	Computer time leasing

Those completing this course would enter the Bureau of Labor Statistics occupation classification of *SOC:15-1199 All other computer occupations*. (See: https://www.bls.gov/soc/2010/soc151199.htm). The reviewer finds that this classification is correct. There is not a specific classification for Computer Forensics; the all other category would apply.

All computer occupations not listed separately. Excludes "Computer and Information Systems Managers" (11-3021), "Computer Hardware Engineers" (17-2061), "Electrical and Electronics Engineers" (17-2070), "Computer Science Teachers, Postsecondary" (25-1021), "Multimedia Artists and Animators" (27-1014), "Graphic Designers" (27-1024), "Computer Operators" (43-9011), and "Computer, Automated Teller, and Office Machine Repairs" (49-2011).

The NCES CIP (Classification of Instructional Programs) is referenced as: 11.99: Computer and Information Sciences and Support Services, Other. (See: https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=88086)
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.

JOB SUMMARY:

**At the time of this search (June 26, 2017), Reviewer could not locate any direct occupations that tie to this course in the State of Maine. Reviewer did find some Hypervisor Developer positions in other locations, these have been included.

Hypervisor Developer IBM

Are you passionate about technology? Do you love building new things? Do you want to develop the future of IBM's Cloud offerings? If you answered YES, then we have the right opportunity for you! The shift toward the consumption of IT as a service, i.e., the cloud, is one of the most important changes to happen to our industry in decades. At IBM, we are driven to shift our technology to an as-a-service model and to help our clients transform themselves to take full advantage of the cloud. With industry leadership in analytics, security, commerce, and cognitive computing and with unmatched hardware and software design and industrial research capabilities, no other company is as well positioned to address the full opportunity of cloud computing. We are looking for Hypervisor Developers to join our Cloud Innovation Lab team in Littleton, MA who innovates & shares our passion for winning in the cloud marketplace. The Cloud Innovation Lab is a team dedicated to ensuring that the IBM Cloud is at the forefront of cloud technology, from data center design to network architecture to storage and compute clusters to flexible infrastructure services. We are building IBM's next generation cloud platform to deliver performance and predictability for our customers' most demanding workloads, at global scale and with leadership efficiency, resiliency and security. It is an exciting time, and as a team we are driven by this incredible opportunity to thrill our clients. The successful candidate will be the Hypervisor Developer as part of the Cloud Platform team and should have the following qualifications: • Should be familiar with virtualization, cloud computing operating models and security. The candidate must have a proven track record in software development including architecture, design and implementation of complex system software. • Must have a passion for technology, hands on but also the ability to build grass roots collaboration, and champion their ideas.

**The market for Computer Forensics in a 50-mile radius of South Portland, ME is very sparse. Two jobs somewhat relate but do not have direct ties to the outcomes in this course. There were less than six that the reviewer found in other US state and three in other countries. Job demand for this specialization is specifically related to Criminal Justice or Law occupations.

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 The learning outcomes should include both first and second-level outcomes; please see examples provided in this review to better inform students of expectations.
- A.2 The course prerequisites are indicated.
- A.3 Course objectives are not measurable, please spend time reviewing the course outcomes and mapping to the actual course assignments.
- A.4 Learning objectives could be better aligned to industry standards. This was difficult to ascertain due to the low amount of jobs in the market open.
- 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			X
expectation of the overarching knowledge, skills, and			
abilities that 1 st year college students should possess.			
B.2 Core course competencies are relevant to		X	
industry and employers.			
B.3 Instruction, activities, and assignment in		X	
individual courses are relevant and engaging to			
students.			

- B.1 Could better align with industry standards.
- 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 No, the purpose of the instructional materials was not described.
- 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.

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 grading strategies however a lack of variety in submissions; all seem to focused on screenshots. Videos are an effective tool as well (screen sharing).