Subject Matter Expert Summary Report

MIT6xx
Open Source Web Development

Submitted to Maine is IT in fulfillment of the
TAACCCT grant requirements
By
Emporia State University

October 2016

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

Course Review for: Maine is IT
Course: NMCC: MIT 6xx – Open Source Web Development
Reviewed by: Joseph Kern
Date: 10/28/16

The content of this course, including lectures, labs, activities, assignments, and/or assessments is copyrighted by the textbook publisher. As a result, the only document available for review and Creative Commons distribution is the course syllabus.

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	**0**
1.2 Learners are introduced to the purpose and structure of the course.	3	**2**
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	**0**
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	**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		**3**

Comments:

1.1: No link to the LMS or instructions are given to help students access the course or its contents. Consider adding a direct course link.

1.2: The purpose of the course seems to be clearly stated by describing the knowledge and skills gained, although the grade is based on completion of a certification exam that is not specified in the purpose. If achieving certification is the ultimate course goal, this is not clearly stated. The weekly breakdown of both in-class and on-your-own tasks clearly conveys the course structure.

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 other 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 that students must follow are not included. These would include policies on absences, academic dishonesty, late work, etc. If these are not fully explained in the syllabus, a link to the policies should be provided.

1.5: The need for a flash drive is listed, but no minimum hardware or software requirements are provided to ensure that students are prepared for course activities. Hardware and software requirements should be added to the Course Requirements section of the syllabus, along with instructions or links to help students access the correct versions.

1.6: Prerequisite knowledge and competencies are listed adequately. If there are prior courses that would help students achieve these prerequisites, a link to them would be helpful.

1.7: Minimal skills for students entering the course are not listed. These would include specific tasks within the prerequisite topics that students must be able to complete.

1.8: No introduction for the instructor or link to an online introduction is given.

1.9: Nothing in the syllabus indicates explicitly that students are asked to introduce themselves.

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	**1**
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	**2**
2.5 The learning objectives or competencies are suited to the level of the course.	3	**3**
Total		**10**

Comments:

2.1: The course learning objectives are measurable, given proper rubrics.

2.2 : Unit-level objectives are not listed for each weekly set of labs, so it is unclear whether they would be measureable. Based on the weekly topics and the table of contents of the required textbook (https://www.pearsonelt.ch/Informatik/Addison-Wesley/EAN/9780201770612/Open-Source-Development-with-LAMP-Using-Linux-Apache-MySQL-Perl-and-PHP), the unit-level activities would align with the course-level objectives.

2.3: Course-level learning objectives and competencies are clearly stated from a student perspective, but unit-level competencies that students will accomplish are not reported. It is unclear what students will do within each listed technology to learn it. A general description of each lab activity or outcome would serve this purpose without violating copyright, as long as the description was not copied from the textbook.

2.4: Objectives and descriptions of each activity are not listed, so this relationship is unclear. The overarching course objective of using a LAMP platform to develop a PHP environment seems to entail many specific activities that align with the weekly topics, so it is reasonable to infer that course activities within each topic align with the learning outcomes. This connection between activities and outcomes should be stated more explicitly, possibly through descriptions of the activities and the skills they will be building.

2.5: The course objectives are appropriate for the level of the course.

C. Assessment & Measurement (13 points total)		
3.1 The assessments measure the stated learning objectives or competencies.	3	**1**
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	**0**
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	**2**
Total		**9**

Comments:

3.1: The only assessment that applies to the course grade is an unidentified certification exam. This exam is not included in the listed course activities but is mentioned in the Student Evaluation and Grading section of the syllabus. Without information regarding this exam and what it assesses, the reviewer is unable to determine whether it is an appropriate assessment for the course learning objectives. There are lab assignments listed with each weekly topic, although there are no details regarding their alignment with any unit-level objectives. It would be reasonable to infer that if the labs and unit objectives come from the same course textbook that they would align. Including details about the certification exam, including any links to an exam website would be helpful, as would including more detail about how assessments connect to specific outcomes.

3.2: Course grading policy is clear and succinct, other than that the certification exam is not named.

3.3: No criteria are given for unit-level assessments. It is unclear how the lab assignments will be evaluated. Criteria are not given for the summative certification exam. This lack of criteria does not negatively affect the grading policy, as it does not include course assignments and is entirely based on whether the certification exam is passed, but the lack of criteria does make it more difficult for students to understand what they need to know or do to be successful.

3.4: Details are not given, but it is reasonable to infer that the weekly lab assignments follow the sequence of the chapters. With only one type of assignment, it is doubtful that their methods are varied, although they are likely to be applications of each chapter's skills and concepts, so the content varies. Whether these assessments are suitable to the learner work and to the ultimate goal of passing the certification are unknown without more detail about the assignments.

3.5: Each week has multiple lab assignments, which can reasonably be assumed to serve as opportunities in which students can gauge their progress, although details about the level of feedback provided are not given.

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	**2**
4.2 Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.	3	**0**
4.3 All instructional materials used in the course are appropriately cited.	2	**2**
4.4 The instructional materials are current.	2	**0**
4.5 A variety of instructional materials is used in the course.	2	**0**
4.6 The distinction between required and optional materials is clearly explained.	1	**1**
Total		**5**

Comments:

4.1: Materials are all copyright protected and are not able to be reviewed by anything more than the table of contents, found online (https://www.pearsonelt.ch/Informatik/Addison-Wesley/EAN/9780201770612/Open-Source-Development-with-LAMP-Using-Linux-Apache-MySQL-Perl-and-PHP). The listed topics do align with the course outcomes. Alignment with unit-level outcomes cannot be certain, as these were not listed in the syllabus.

4.2: Materials and their purposes for learning are not explained. As recommended in the Assessments section of this review, describing the activities conducted in each unit would provide this clarity without violating copyright rules.

4.3: Specific materials are not listed, other than the required textbook, which is identified by ISBN. It is stated that all course materials come from this book.

4.4: The required textbook was published in 2003. There is a companion website containing downloadable code, errata, etc. (www.opensourcewebbook.com). There is no publication date on the website, but no resources included dates more recent than 2003. A sampling of hyperlinks from the Linux resource page found that 3 of 9 links are dead, and 1 was written in Japanese. Without seeing the exam outcomes, the appropriateness of the materials cannot be determined, but it is likely that many of the tools and resources are outdated.

4.5: Not able to confirm the variety of instructional materials. The syllabus only lists chapters and labs, so it does not appear to be very diverse.

4.6: A required textbook is listed. As this seems to be the entirety of the course content, the distinction between required and optional materials is adequately made.

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	**0**
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		**3**

Comments:
5.1: Specific activities are not made clear, but as both the objectives and activities seem to be based on the same textbook material, it is reasonable to infer that activities would promote achievement of the objectives.
5.2: It is not evident that learners are interacting with anything or anyone other than the content and its prescribed activities.
5.3: No plan is provided for classroom response time or assignment feedback.
5.4: No requirements are listed for learner interaction.

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	**2**
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		**8**

Comments:
6.1: While the tools (hardware/software) used in the course are not specified, the course objectives directly involve the use of these tools to support learning.
6.2: The tools lend themselves to active learning through hands-on application and practice. The assignment of weekly labs would indicate that this is how the tools are being used, although this cannot be certain without more detail.
6.3: Being a course on open source development, the languages and platforms used are freely available online. Including links to the download site of each software would be helpful.
6.4: If each technology is downloaded in its latest version from its source's website then each would be as current as possible.
6.5: No links are provided in the syllabus. 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: No technical support information is provided in the syllabus. It is recommended that multiple channels of tech support communication be listed in the syllabus to ensure that no student is put behind due to technical difficulties.
7.2: A general ADA compliance statement is made, along with a statement directing any student with special needs to contact the correct NMCC office, with the contact information provided. No listing of broader policies is included. It is recommended that a link to NMCC's disability services information be included.
7.3: No academic resources are listed. If tutoring, advising, or other student services are available to support academic success, these should be listed along with links or contact information.
7.4: Other than contact information to report and address discrimination, no student support services or resources are listed. If there are services to support student life resources, such as counseling or student wellness, these should be listed along with links or contact information.

H. Accessibility and Usability (12 points total)		
8.1 Course navigation facilitates ease of use.	3	**0**
8.2 Information is provided about the accessibility of all technologies required in the course.	3	**0**
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	**0**
8.5 Course multimedia facilitate ease of use.	2	**0**
Total		**0**

Comments:

8.1: Unable to review this item. Course navigation should be designed to minimize the number of clicks necessary to access information.
8.2: Information regarding the accessibility of technology used is not included. This would include instructions on how to obtain and install any programs used.
8.3: Unable to review this item. In addition to varying the modality of content through text, audio, and video instruction, 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. For videos, a transcript or videos that are captioned are required as an effective means of communication.
8.4: Unable to review this item. 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: Unable to review this item. When possible, embedding multimedia within the course LMS ensures ease of access and limits student issues that may arise when leaving the LMS to access outside resources.

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.
• See Subject Matter Expert review for specific feedback.

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 from the publisher, 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: NMCC: MIT 6xx
Course Name: Open Source Web Development
Reviewed by: Joseph Kern
Date: October 28, 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 MIT6xx 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 with 30 miles of NMCC 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 MIT6xx relate to specific job openings.
2. Current job openings list specific duties that relate the Open Source Web Development course, MIT6xx.
3. The MIT6xx course is a certification course only. The current Advisory Board indicates it contributes to the labor market data.

There are several current job openings available for open source web development (as of 10/28/16) within a 50-mile radius of NMCC. A Frontend Developer is currently being sought at the time of the review with a leading software development company, King. Job description calls for "We are looking for an experienced frontend developer with strong JavaScript/TypeScript, HTML, CSS and React/Angular skills to join our Business Performance team in Stockholm. The ideal applicant will be a natural problem solver, proficient in developing user interfaces, dashboards and real time applications that are used by our analytics department." The same company has an additional job opening for a C++ Developer with skills implementing high quality code in C++ and the ability to architect & design APIs and components used by other developers through open source.

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 MIT6xx course learning outcomes and objectives align with the program mission and goals. This reviewer found that the MIT6xx course has listed measurable outcomes which can be stacked and latticed with other coursework. The industry sector for MIT6xx 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 *SOC:15-1134 Web Developers*. (See: http://www.bls.gov/soc/2010/soc150000.htm#15-1100)

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 community college level students with prerequisite experience and understanding of programming, HTML, and SQL.

Course objectives include:
1. Use LAMP (Linux, Apache, MySQL, PHP) to develop skills in open source technologies and server-side scripting.
2. Configure a LAMP platform.
3. Use a LAMP platform as a PHP development environment.

The content of these course objectives aligns with the topics listed in the course syllabus. This alignment also correlates to items found within the Dynamic Skills Audit and Burning Glass baseline skills as listed in the labor market data. It is not known whether these skills align with a specific Open Source Web Development certification exam, as none is listed in the course syllabus.
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 - MIT6xx 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 – Previous skills and knowledge are adequately stated.
A.3 - Course objectives are measurable.
A.4 - Learning objectives are similar to the competency levels of similar computer courses, specifying mastery of several technologies to achieve a specific purpose. However, the appropriateness of objectives cannot be completely determined without reviewing their alignment to a specific certification exam.
A.5 – Activities are scaffolded by prerequisite experience, and the additional skills and knowledge from this course would clearly stack on previous coursework. The course's objectives fill an industry need within the program's offerings.

**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	

B.1 - Course objectives align with industry expectations at the appropriate skill level.
B.2 - Core competencies are relevant to industry and employers and evidence of this was 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 web development field and those listed by the Advisory Board.
B.3 - Activities and instruction defined in the course outline offer real-world application in programming and coding languages that are beneficial to students 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 were not made available for review due to the copyright held by the publisher, although the contents of the required textbook were reviewed online (https://www.pearsonelt.ch/Informatik/Addison-Wesley/EAN/9780201770612/Open-Source-Development-with-LAMP-Using-Linux-Apache-MySQL-Perl-and-PHP). Textbook contents aligned with course objectives, although the learning activities were not described or listed with correlating unit-level objectives. Unit-level objectives and activity descriptions should be added to clearly show students the purpose of each assignment.

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 content.			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. There is a question of the age of the textbooks and whether materials are up-to-date with current versions of each software and coding platform. Out-of-date materials would reduce the effective contribution of the materials to preparing students for the newest applications of the course competencies.

C.2   – Explanations are not given to clarify how the materials will be used and what types of activities will be performed by students in each lab assignment.

C.3 – Without seeing the course materials, this reviewer is unable to determine their variety regarding perspective and approach. The technology content varies throughout the course, which would lead to a variety of activities, but the presentation of content and performance of lab experiences may occur identically and unvaried throughout the course.

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 that is not specified in the syllabus. There are assignments for each unit, and these 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, with the exception of identifying the certification exam used.
D.2 – Without knowing the certification exam used, this reviewer is unable to determine whether this course assessment aligns with the course objectives and activities.
D.3 – No criteria or guidance was given to let students know how their work throughout the course would be evaluated to provide feedback on their progress. Especially if these assignments 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 assignments.
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 lab may be procedurally-identical, although each will involve a unique technology application. It is reasonable to assume that each unit's lab involves creating something with that unit's listed technology, which would make each assignment appropriate to the content.