

Subject Matter Expert Summary Report



Maine is IT!

INFORMATION TECHNOLOGY

A CONSORTIUM OF MAINE'S SEVEN COMMUNITY COLLEGES

MIT6xx

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

*By
Emporia State University*

EMPORIA STATE
UNIVERSITY
■ INFORMATION TECHNOLOGY

October 2016



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

Course Review for: Maine is IT
Course: MIT6xx – MS SQL Querying
Reviewed by: Anna J. Catterson, Ph.D
Date: October 28, 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	0
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	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	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	3
Comments:		
<p>1.1: No link to the LMS was provided. Consider adding instructions on how to access the course in the LMS. Consider adding the link to the actual course.</p> <p>1.2: The purpose and structure for the course was clearly explained in the syllabus.</p> <p>1.3: Etiquette expectations (sometimes called “netiquette”) for online discussions, email, and other forms of communication should be covered. Examples include:</p> <ul style="list-style-type: none"> • Be sensitive to the fact that there will be cultural and linguistic backgrounds, as well as different political and religious beliefs, plus just differences in general. • Use good taste when composing your responses in Discussion Forums. Swearing and profanity is also part of being sensitive to your classmates and should be avoided. Also consider that slang can be misunderstood or misinterpreted. • Don’t use all capital letters when composing your responses as this is considered “shouting” on the Internet and is regarded as impolite or aggressive. It can also be stressful on the eye when trying to read your message. • Be respectful of your others’ views and opinions. Avoid “flaming” (publicly attacking or insulting) them as this can cause hurt feelings and decrease the chances of getting all different types of points of view. • Be careful when using acronyms. If you use an acronym it is best to spell out its meaning first, then put the acronym in parentheses afterward, for example: Frequently Asked Questions (FAQs). After that you can use the acronym freely throughout your message. 		

- Use good grammar and spelling, and avoid using text messaging shortcuts.

1.4: Course and institutional policies were not covered in the syllabus.

1.5: Technology requirements were not stated in the syllabus other than a Flash Drive for a required storage device.

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

1.7: Minimum skills were not covered in course materials/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.

1.9: A link to a discussion thread is not provided for students to communicate, informally, with each other outside of the class meetings. It may be inside the course itself which we cannot access.

B. Learning Objectives & Competencies (15 points total)

2.1 The course learning objectives, or course/program competencies, describe outcomes that are measurable	3	1
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	0
2.4 The relationship between learning objectives or competencies and course activities is clearly stated.	3	0
2.5 The learning objectives or competencies are suited to the level of the course.	3	3
Total		5

Comments:

2.1: The course learning objectives or course/program competencies should be directly related to the **Querying Microsoft SQL Server 2012/2014** certification exam. This particular exam went through an extensive review in December of 2015 by Microsoft. It was determined at that time that no further updates were needed at that time.

<https://www.microsoft.com/en-us/learning/exam-70-461.aspx>

Reviewer highly recommends linking course learning objectives and course outcomes directly to the 70-461 Exam. Outcomes should reflect the following:

- Create and alter tables using T-SQL syntax (simple statements)
 - Create tables without using the built in tools; ALTER; DROP; ALTER COLUMN; CREATE
- Create and alter views (simple statements)
 - Create indexed views; create views without using the built in tools; CREATE, ALTER, DROP
- Design views
 - Ensure code non regression by keeping consistent signature for procedure, views and function (interfaces); security implications
- Create and modify constraints (simple statements)
 - Create constraints on tables; define constraints; unique constraints; default constraints; primary and foreign key constraints
- Create and alter DML triggers
 - Inserted and deleted tables; nested triggers; types of triggers; update functions; handle multiple rows in a session; performance implications of triggers
- Query data by using SELECT statements
 - Use the ranking function to select top(X) rows for multiple categories in a single query; write and perform queries efficiently using the new (SQL 2005/8->) code items such as synonyms, and joins (except, intersect); implement logic which uses dynamic SQL and system metadata; write efficient, technically complex SQL queries, including all types of joins versus the use of derived tables; determine what code may or may not execute based on the tables provided; given a table with constraints, determine which statement set would load a table; use and understand different data access technologies; case versus isnull versus coalesce
- Implement sub-queries
 - Identify problematic elements in query plans; pivot and unpivot; apply operator; cte statement; with statement
- Implement data types

- Use appropriate data; understand the uses and limitations of each data type; impact of GUID (newid, newsequentialid) on database performance, when to use what data type for columns
- Implement aggregate queries
 - New analytic functions; grouping sets; spatial aggregates; apply ranking functions
- Query and manage XML data
 - Understand XML datatypes and their schemas and interop w/, limitations and restrictions; implement XML schemas and handling of XML data; XML data: how to handle it in SQL Server and when and when not to use it, including XML namespaces; import and export XML; XML indexing
- Create and alter stored procedures (simple statements)
 - Write a stored procedure to meet a given set of requirements; branching logic; create stored procedures and other programmatic objects; techniques for developing stored procedures; different types of storeproc result; create stored procedure for data access layer; program stored procedures, triggers, functions with T-SQL
- Modify data by using INSERT, UPDATE, and DELETE statements
 - Given a set of code with defaults, constraints, and triggers, determine the output of a set of DDL; know which SQL statements are best to solve common requirements; use output statement
- Combine datasets
 - Difference between UNION and UNION all; case versus isnull versus coalesce; modify data by using MERGE statements
- Work with functions
 - Understand deterministic, non-deterministic functions; scalar and table values; apply built-in scalar functions; create and alter user-defined functions (UDFs)
- Optimize queries
 - Understand statistics; read query plans; plan guides; DMVs; hints; statistics IO; dynamic vs. parameterized queries; describe the different join types (HASH, MERGE, LOOP) and describe the scenarios they would be used in
- Manage transactions
 - Mark a transaction; understand begin tran, commit, and rollback; implicit vs explicit transactions; isolation levels; scope and type of locks; truncount
- Evaluate the use of row-based operations vs. set-based operations
 - When to use cursors; impact of scalar UDFs; combine multiple DML operations
- Implement error handling
 - Implement try/catch/throw; use set based rather than row based logic; transaction management

2.2: The Course Outline is difficult to map to course level competencies. Syllabus is expressed as Chapters/Lessons rather than Topics. Consider changing this to read *Topics* that align with the Microsoft 70-461 exam. Topics such as Introduction, Chapter 3-4, Chapters 5-6, etc. will not help the student prepare and be successful. Reviewer recommends aligning schedule with specific outcomes covered in those corresponding weeks. The outcomes have been outlined above.

2.3: The course learning objectives clearly state what the learner is to accomplish by the end of the course.

2.4: The reviewer assumes the course activities relate to the learning objectives. This could be stated more clearly in the syllabus.

2.5: The learning objectives need to mirror the 70-461 Exam.

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: Only one assessment mentioned, Querying MS SQL Server 2012 Databases however, the actual exam title is called: **Querying Microsoft SQL Server 2012/2014**. Reviewer recommends including 2014 and including the proper name of the certification.

3.2: The grading policy is stated in the syllabus. Pass/Fail based on certification exam.

3.3: The criteria are aligned with the grading policy. Pass/Fail based on certification exam.

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

3.5: There are multiple opportunities to track progress. The course includes multiple "knowledge assessment" opportunities for each module/week/unit.

The course is a copyrighted certification from the Microsoft corporation. The reviewer assumes the assignments, assessments, and evaluation are current, up-to-date, and relates to the desired competencies for the certification.

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	
4.2 Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.	3	
4.3 All instructional materials used in the course are appropriately cited.	2	
4.4 The instructional materials are current.	2	
4.5 A variety of instructional materials is used in the course.	2	
4.6 The distinction between required and optional materials is clearly explained.	1	
	Total	N/A
Comments:		
<p>4.1: Copyrighted Instructional Materials, however course outcomes reviewed on Microsoft website: https://www.microsoft.com/en-us/learning/exam-70-461.aspx</p> <p>4.2-4.6 should include: specific instructional methodologies, how the information will be presented and how material will be provided to them. Links to materials or to LMS would be recommended. Reviewer unable to review; only recommending.</p>		

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	2
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:		
<p>5.1: The learning activities/learning objectives were reviewed on the Microsoft https://www.microsoft.com/en-us/learning/exam-70-461.aspx website - however, no mention of the learning activities found in the course syllabus. Reviewer recommends adding to the syllabus.</p> <p>5.2: There are opportunities for interactive learning. This is a very applied course. Opportunities for hands-on activities and applied learning concepts. Reviewer recommends placing instructional methodology on the course syllabus.</p> <p>5.3: A plan for feedback is not specified.</p> <p>5.4: Requirements for expected learner interaction is not specified.</p> <p>The course is a copyrighted certification from the Microsoft corporation. The reviewer assumes the content includes learning activities related to stated objectives</p>		

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	1
Total		10

Comments:

6.1: The tools in the course (MS SQL Querying) support the unit/weekly objectives. The assignments clearly state what tools/applications are needed to successfully complete the work. Reviewer noted this is an eight-week course; but only titles were displayed. Reviewer recommends using the outcomes/objectives from Microsoft on the syllabus for assessment purposes.

6.2: No tools or methodology mentioned in course syllabus.

6.3: The tools will likely be provided by the college.

6.4: The course technologies are current when assessing the 70-461 Exam.

6.5: Privacy policies are available.

The course is a copyrighted certification from the Microsoft corporation. The reviewer assumes the course technology requirement is current, up-to-date, and relates to the desired competencies for the certification.

G. Learner Support (9 points total)

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

Comments:

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

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

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

7.4: As with academic support, student wellness and support is also critical. Consider providing instructions/links to the institutional student support services.

The course is a copyrighted certification from the Microsoft corporation. The reviewer assumes Microsoft provides links to learner support.

H. Accessibility and Usability (12 points total)

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

Comments:

8.1: Make sure navigation is easy and intuitive (minimum clicks to reach destination). The rater assumes this has been considered.

8.2: If students must download/install technology, make sure clear instructions are provided. The rater assumes this has been considered.

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. The rater assumes this has been considered. Microsoft software includes an Accessibility Checker.

Reviewer also noted that the following languages are compatible with this certification exam: English, Chinese, French, German, Japanese, And Portuguese (Brazil). Reviewer suggest adding to course syllabus for International Students.

8.4: The reviewer assumes this has been considered.

8.5: The reviewer assumes this has been considered. (If required.)

The course is a copyrighted certification from the Microsoft corporation. The reviewer assumes the accessibility and usability provided by Microsoft is compliant with best practices.

Part II: Employment Data**Stakeholder Involvement and Employment Opportunities**

Items Reviewed include:

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

Findings include:

- See Subject Matter Expert review for specific feedback.

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: MIT6xx
Course Name: MS SQL Querying
Reviewed by: Anna J. Catterson, PhD
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 in Aroostook 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 MS SQL Querying course relate to specific job openings.
2. Current job openings list specific duties that relate the MS SQL Querying course.
3. The MIT6xx course is a certification course only. The current Advisory Board indicates it 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:

Those completing this course would enter the Bureau of Labor Statistics occupation classification of *15-1140 Database and Systems Administrators and Network Architects*.) Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. Excludes "Information Security Analysts" (15-1122) (See: <http://www.bls.gov/soc/2010/soc151140.htm>)

The NCES CIP Title has been referenced as Computer Software Technology/Technician and the CIP Code is 15.1204. It can be defined as A program that prepares individuals to apply basic engineering principles and technical skills to support engineers in developing, implementing, and evaluating computer software and program applications. Includes instruction in computer programming, programming languages, databases, user interfaces, networking and warehousing, encryption and security, software testing and evaluation, and customization. (<http://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cip=15.1204>).

This course was designed for 1st year community college level students or equivalent. This reviewer found that there are no prerequisites for this course.

Course objectives include:

1. Creating a database object (20-25%)
2. Working with data (25-30%)
3. Modifying Data (20-25%)
4. Troubleshooting and optimizing (25-30%)

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 - Reviewer suggest adding the course outcomes (described in previous section of report)

A.2 - This course has no stated prerequisites and is non-credit; reviewer recommends placing on the syllabus.

A.3 - Course objectives are measurable (reviewed from MS Certification Exam site – not the course syllabus).

A.4 - Learning objectives are aligned to the industry certification for MS SQL Querying; reviewer suggest mirroring the outcomes of exam to the syllabus.

A.5 – No activities noted; no methodology mentioned.

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

B.1 - Yes. The specific course objectives clearly represent industry expectations and also are current and relevant. Database administration found in Burning Glass and Advisory Board meetings; it was clear to the reviewer that this course was reviewed by external partners.

B.2 - Yes. 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. This reviewer took the interview summaries from Advisory Board members, current job openings and descriptions and matched them directly to all ten of the listed course objectives.

B.3 – Yes. Activities and instruction defined in the course outline offer real-world application in programming and coding languages 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 (*note: all program/course materials are deliverable under Microsoft licensing*). 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.

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 – C.4

Reviewer suggesting placing instructional methodology into the course syllabus. Reviewer only could review course learning objectives found on the Microsoft Exam 70-461 website. Syllabus should reflect the instructional methods in which the instruction will use; this was not found by the reviewer.

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:

Assessment strategies use established ways to measure effective learning, evaluate student progress by reference to stated learning objectives, and are designed to be integral to the learning process. The reviewer compared and contrasted the objectives on the syllabus as well as the comprehensive list of outcomes on Microsoft Certification website.

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 - Yes. Grading is based on passing the 70-461 Certification.

D.2 - N/A. This is delivered as a capstone course certification exam.

D.3 - The reviewer did not find any specific or descriptive criteria that was provided for the evaluation of student work and no visual representation of how the course work ties into the grading policy. (Other than successfully passing the capstone exam.) As mentioned previously, this could be solved with a simple outline listing each assignment, the due date, and total points possible. In order to encourage students, especially in this particular field, it would be best practice to encourage them by **listing assignments and due dates early so students are prepared for their learning.**

D.4 - The reviewer did not find any specific or descriptive criteria that was provided for the assessment instruments related to student work, and no visual representation of how the course assessment strategy ties into the grading policy.