Formal Evaluation and Subject Matter Expert Summary Report

ETC220

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

February 2017

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

Course Review for: Maine is IT
Course: ETC220: Microprocessor Applications
Reviewed by: Anna J. Catterson, Ph.D.
Date: February 8, 2017

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
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	2
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		6

Comments:

1.1: Reviewer did not find any instruction on how to get started in the course, however it was noted that communication is via Blackboard and students are responsible for checking.

1.2: The purpose and course description was clearly documented. Reviewer suggests adding a course outline with due dates and modules.

1.3: Etiquette expectations (sometimes called "netiquette") for online discussions, email, and other forms of communication should be covered. Reviewer did not find any mention of "netiquette" and examples that could be included are as follows:
- Be sensitive to the fact that there will be cultural and linguistic backgrounds, as well as different political and religious beliefs, plus just differences in general.
- Use good taste when composing your responses in Discussion Forums. Swearing and profanity is also part of being sensitive to your classmates and should be avoided. Also consider that slang can be misunderstood or misinterpreted.
- Don't use all capital letters when composing your responses as this is considered "shouting" on the Internet and is regarded as impolite or aggressive. It can also be stressful on the eye when trying to read your message.
- Be respectful of your others' views and opinions. Avoid "flaming" (publicly attacking or insulting) them as this can cause hurt feelings and decrease the chances of getting all different types of points of view.
- Be careful when using acronyms. If you use an acronym it is best to spell out its meaning first, then put the acronym in parentheses afterward, for example: Frequently Asked Questions (FAQs). After that you can use the acronym freely throughout your message.
- Use good grammar and spelling, and avoid using text messaging shortcuts.

1.4: Course and institutional policies were covered in the syllabus. The following links are broken:

- "The usual scale utilized can be found below and in the College Catalog page 11 which is available on Kennebec Valley Community College's website: KVCC's Website"
- "This document is available in enlarged print and on audio tape. Please contact the Dean of Students at [insert phone]. More information on Kennebec Valley Community College's ADA Policy can be found online at: ADA Policy."

It is suggested to insert the phone number and email address where it is documented [insert phone], [insert email]. Replace the template with the updated information. Also, include instructor contact information and a short biography.

Note: This is an on-ground course. The Attendance Policy was introduced, but no parameters as to how absenteeism would affect a student's grade was discussed other than to indicate it could impact employer references. A stronger attendance policy might help reduce potential ambiguity. Also, consider including the last day to withdrawal and the last day for a refund. This can help students understand their responsibility.

1.5: Technology requirements were not stated in the syllabus however, supplies were stated. Reviewer suggests adding a section specifically for technology requirements. What type of computer, internet, browser and/or software is needed?

1.6: ETC110 Computer Technology Fundamentals, ETC119 Digital Electronics, ETC125 Semiconductor Device; identified.

1.7: No technical skills were identified of students.

1.8: Difficult to ascertain because access to the Blackboard course was not provided. The instructor's contact information is not indicated in the syllabus, please consider updating.

1.9: Difficult to ascertain because access to the Blackboard course was not provided. The Reviewer recommends adding an introduction activity in the syllabus.

B. Learning Objectives & Competencies (15 points total)		
2.1 The course learning objectives, or course/program competencies, describe outcomes that are measurable	3	**3**
2.2 The module/unit learning objectives or competencies describe outcomes that are measurable and consistent with the course-level objectives or competencies.	3	**3**
2.3 All learning objectives and competencies are stated clearly and written from the learner's perspective.	3	**3**
2.4 The relationship between learning objectives or competencies and course activities is clearly stated.	3	**2**
2.5 The learning objectives or competencies are suited to the level of the course.	3	**3**
Total		**14**

Comments:

2.1: There are numerous course objectives that are clearly expressed and measurable. Each learning objective should be cross referenced to the learning activities in the course. Creating a numbered list and then referencing each numbered item for each assignment/activity would be helpful for assessment purposes.

2.2: The syllabus describes learning objectives using measurable language and verbs. Consider mapping these course-level learning objectives and activities to the overall program outcomes/competencies. Those would be the outcomes required for accreditation. (See 2.1) The learning objectives were closely related to the certification exam, but not identical. While the material for the C.E.T is reviewed (from the syllabus) no mention of the students taking the certification exam. Reviewer recommends providing this opportunity to students and giving the reference in the syllabus to the certification exam.

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

2.4: A general overview of projects and activities was indicated, but more detailed information relative to these course tasks would strengthen the syllabus.

2.5: Yes, the reviewer noted the complexity of the syllabus as well as the intensity and finds it to suit the level of the course.

C. Assessment & Measurement (13 points total)		
3.1 The assessments measure the stated learning objectives or competencies.	3	**3**
3.2 The course grading policy is stated clearly.	3	**3**
3.3 Specific and descriptive criteria are provided for the evaluation of learners' work and are tied to the course grading policy.	3	**2**
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	**1**
Total		**10**

Comments:

3.1: Difficult to ascertain from the syllabus alone, however, four exams worth 40% of the grade, Lab Projects for an additional 40% and the Final Exam worth 20% of the grand total.

3.2: The grading policy/rubric is stated in the syllabus.

3.3: The Reviewer found some descriptive criteria associated with the grading policy. However, this could be strengthened. This could be improved by stating the feedback policy (how often, how much time will it take the instructor to review and respond?). Including these details will strengthen the grading policy.

3.4: There was a high-level description of assessments (eg Lab Projects and Assignments). The Reviewer would have preferred a more detailed breakdown of assessments relative to each week/module/unit with course objective alignment clearly indicated. Due dates would have been preferred.

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. How will students be alerted of their progress and IF a student were to fail one unit, is remedial work considered?

D. Instructional Materials (13 points total)		
4.1 The instructional materials contribute to the achievement of the stated course and module/unit learning objectives or competencies.	3	**3**
4.2 Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.	3	**2**
4.3 All instructional materials used in the course are appropriately cited.	2	**N/A**
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		**10**

Comments:

4.1: The table of "Texts and Supplies" is confusing. If there is not a textbook, I would remove the header row. The list provides appears to be primarily supplies and no text. If the C.E.T exam is being referenced, reviewer suggest including that as supplemental information. Is there any Open Education Resources (OER) that could be referenced as well? Reviewer strongly encourages the use of a text for reference or at least a supplementary resource to help students with success in the course.

4.2: The purpose of the instructional materials in the course is implied. Much of this class is a hands-on course; allowing opportunity for collaborative work however, no group work or assignments noted where collaboration and communication are provided. According to the Dynamic Skills Audit, these are skills required for this particular industry. These skills also referenced on specific job requirements. Reviewer suggests including assessments that have a correlation to this soft skill set. (Written or Oral)

4.3: No instructional materials to cite.

4.4: The only instructional materials that were required and reviewer was able to review consisted of equipment. No other required instructional materials noted.

4.5: Limited instructional materials, however, the equipment and supplies are varied and the course offers a diverse learning opportunity.

4.6: Optional materials are not part of this course. Reviewer strongly suggests adapting supplemental materials; especially when no textbook is required.

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	**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		**5**

Comments:

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

5.2: There are opportunities for interactive learning. This is a theory/lab course with significant opportunity for students to gain knowledge through hands-on activities.

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	**2**
6.2 Course tools promote learner engagement and active learning.	3	**3**
6.3 Technologies required in the course are readily obtainable.	2	**1**
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		**7**

Comments:

6.1: The tools in the course appear to support the learning objectives. Links to user manuals relating to the supply list is recommended.

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

6.3: The supplies are required to be purchased by the student and are obtainable through Electronix Express. The reviewer recommends including a link to the website (http://www.elexp.com/) and indicating the costs for the additional supplies on the course syllabus.

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

6.5: Certain policies (eg, ADA, Codes of Conduct, etc.) are provided via extracted policy wording. However, the Reviewer was unable to locate links to privacy policies (eg, HIPAA, FERPA, etc.) Consider including that language in the course syllabus. The ADA link is broken; referenced earlier.

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.

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.
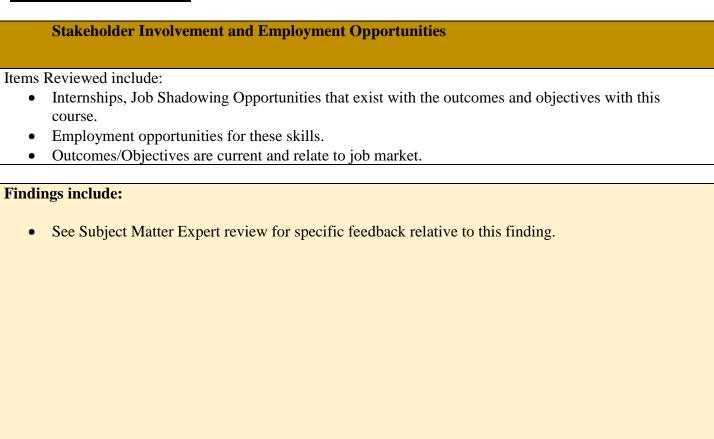
H. Accessibility and Usability (12 points total)		
8.1 Course navigation facilitates ease of use.	3	**3**
8.2 Information is provided about the accessibility of all technologies required in the course.	3	**2**
8.3 The course provides alternative means of access to course materials in formats that meet 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:** Implied. The Reviewer did not have access to the Blackboard course.

8.2: This could be strengthened to include information specific to students with physical or learning disabilities.

8.3: Implied. The Reviewer did not have access to the Blackboard course. 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.

The Pearson supplemental website is accessible and can be read on a screen reader. Consider making the course syllabus ADA compliant as well (no bold, use Strong, no italics, use emphasis, use tables, etc.)

8.4: Implied. The Reviewer did not have access to the Blackboard course. Consider processing this course through an ADA checker. Webaim is one such option. http://wave.webaim.org

8.5: Implied. The Reviewer did not have access to the Blackboard course. Ensure content, such as videos, are easy accessed and include either 1) captioning and/or 2) a transcript.

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 relative to this finding.

Part III: Creative Commons

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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.

Course: ETC 220
Course Name: Microprocessor Applications
Date: February 8th, 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 ETC 220 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 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 ETC 220 relate to specific job openings.
2. Current job openings list specific duties that relate to ETC 220.
3. The current Advisory Board indicates ETC 220 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 ETC 220 course learning outcomes and objectives align with the program mission and goals. This reviewer found that the ETC 220 course has listed measurable outcomes which can be stacked and latticed. The industry sector for ETC 220 has been categorized as: *334111 Electronic Computer Manufacturing* (See: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=334111&search=2017%20NAICS%20Search). This U.S. industry comprises establishments primarily engaged in manufacturing and/or assembling electronic computers, such as mainframes, personal computers, workstations, laptops, and computer servers. Computers can be analog, digital, or hybrid. Digital computers, the most common type, are devices that do all of the following: (1) store the processing program or programs and the data immediately necessary for the execution of the program; (2) can be freely programmed in accordance with the requirements of the user; (3) perform arithmetical computations specified by the user; and (4) execute, without human intervention, a processing program that requires the computer to modify its execution by logical decision during the processing run. Analog computers are capable of simulating mathematical models and contain at least analog, control, and programming elements. The manufacture of computers includes the assembly or integration of processors, coprocessors, memory, storage, and input/output devices into a user-programmable final product.

Cross-References. Establishments primarily engaged in--
- Manufacturing digital telecommunications switches, and local area network and wide area network communication equipment, such as bridges, routers, and gateways--are classified in Industry 334210, Telephone Apparatus Manufacturing;
- Manufacturing blank magnetic and optical recording media--are classified in U.S. Industry 334613, Blank Magnetic and Optical Recording Media Manufacturing;
- Manufacturing machinery or equipment that incorporates electronic computers for operation or control purposes and embedded control applications--are classified in the Manufacturing sector based on the classification of the complete machinery or equipment;
- Manufacturing internal, loaded, printed circuit board devices, such as sound, video, controller, and network interface cards; internal and external computer modems; and solid-state storage devices for computers--are classified in Industry 33441, Semiconductor and Other Electronic Component Manufacturing;
- Manufacturing other parts, such as casings, stampings, cable sets, and switches, for computers--are classified in the Manufacturing sector based on their associated production processes; and
- Retailing computers with on-site assembly--are classified in U.S. Industry 443142, Electronics Stores.

Those completing this course would enter the Bureau of Labor Statistics occupation classification of *SOC:15-1199 Computer Occupations, All Other. 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).*

Course objectives include:

1. **Introduction to Microprocessors and Microcontrollers:**
    o Describe the basic elements of a microprocessor.
    o Compare the difference between a microprocessor and a microcontroller.
    o Describe the internal architecture of the microprocessor.
    o Describe how the microprocessor interfaces with the analog/digital world.
    o Understand the function of the internal and external address, data, and control buses.
    o Describe the READ and WRITE process of the microprocessor.
    o Describe the I/O and MEM process of the microprocessor.
    o Analyze microprocessor schematic diagrams.
    o Convert between binary and hexadecimal numbering systems.

2. **Memory and Storage:**
    o Interpret technical specifications of memory devices.
    o Explain RAM/EPROM architecture and how it is addressed.
    o Explain how the EPROM is programmed and addressed.
    o Describe the various types of RAM/ROM devices and their related architecture.
    o Compare and contrast the various memory technologies.

3. **Bus Structured Architecture:**
    o Describe the function of the data bus, address bus and control bus.
    o Calculate data bus size to computing power.
    o Calculate address bus size to memory storage access.
    o Describe how the micro employs the data, address, and control bus in sequencing instructions.
    o Describe how the microprocessors employ tri-state devices for their operation.

4. **Computer Software and Firmware:**
    o Compare the processes of assembling and compiling programming languages.
    o Describe the difference between low-level and high-level programming languages.
    o Describe how the programming flowchart works.

5. **Microchip PIC18F45K22 Microcontroller:**
    o Identify the function of the pin-outs of the PIC18F45K22 microcontroller.
    o Identify the internal block diagram of the PIC18F45K22 microcontroller.
    o Research the manufacturing data sheet for the PIC18F45K22 microcontroller.
    o Analyze the schematic diagram of the EasyPIC v7 development board.

6. **The C Programming Language:**
    o Compare and contrast C and C++ programming platforms.
    o Use various text editors such as Note Pad and Note Pad++ to develop C programs.
    o Write basic C programs to control the PIC microcontroller onboard and external hardware.
    o Build and control basic digital circuit Input/Output interfaced with the PIC microcontroller.
    o Develop and write C programming code using conditional and loop program controls.
    o Develop and write C programming code using program arrays.
    o Develop and write C programming code to perform a series of control projects.
    o Use compiler and programming techniques to troubleshoot C code programming projects.

7. **Programming Projects Using C:**
    o Develop C code to drive microprocessor input and output (I/O) ports.
    o Develop C code to drive output to LED, 7-segment LED, LCD, and GLCD displays.
    o Develop C code to read, translate, and perform process from analog inputs.
    o Develop C code to read, and perform process from digital inputs.
    o Develop C code to process decisions based upon input analog or digital processes.
    o Develop C code to process input from optical, thermal, and mechanical sensors.
    o Develop C code to drive and PWM motors and servo motor

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. The Burning Glass Dynamic Skills Audit reflected that the top base line skills for this particular course included Communication, writing, organizations, project management, analytical and computer skills.

Some jobs found within a 50-mile radius, include:

Senior/Information Systems Analyst
Information Technology Services
Full-Time, Exempt, Salaried, Administrative Staff Appointment

Reporting to the director of administrative information technology services, this is an advanced technical position that provides analytical and programming support of information systems for Colby. This position is responsible for the design, planning, development, testing, deployment, and maintenance of custom enterprise applications and extensions to existing enterprise applications.

ESSENTIAL FUNCTIONS AND RESPONSIBILITIES:
- Assist the director to manage the application development needs of the College by working closely with other IT personnel, project managers, content providers and customers in efforts to introduce new applications and services
- Gather requirements for applications and services; design solutions and application architecture; and program/code, unit test, and develop technical documentation for complex assignments
- Provide training and documentation on systems
- Communicate client needs and priorities and constantly explore opportunities for business process improvement
- Lead application maintenance needs, web applications and reporting databases
- Respond to reports of application problems; diagnose, provide and implement resolutions
- Troubleshoot and facilitate problem resolution, consult with vendors, support providers and other technical staff as required to gather information and resolve moderately complex issues in a timely manner
- Manage development workflow and assign tasks to information systems analyst as appropriate
- Monitor and coordinate exchanges between users, support staff, vendors and other support providers
- Evaluate the performance of applications to ensure accuracy, data integrity, consistency and security
- Perform, attend or assist with code reviews for security and best programming practices
- Act on behalf of the director in representing the office on various campus committees
- Provide analytical support as needed
- Perform additional duties as assigned; duties, responsibilities, and activities may change at any time with or without notice

Job Summary

The Applications Programmer supports and installs application solutions that integrate seamlessly with Bowdoin's business applications. Responsibilities include supporting applications with an emphasis on database programming and data transformation. Some custom solutions will require application design, development and testing. Expectation to understand relational databases, application stacks, testing methodologies, production support, and the development lifecycle.

Education/Skills Requirements

Required:
– Oracle or SQL Server DB
- Application programming
– Excellent oral and written communication skills and a facility for communicating with non-technical clients.
– Excellent problem solving skills in everything from the hardware to the client.
– Ability to work both in a team environment and independently as required.

Preferred:
– Bachelor's degree
– Application installation
– Knowledge of Banner Higher Education Student software
– Knowledge of Tomcat, IIS and Linux
– Familiarity with college administrative systems such as Admissions, Student Records, Finance, etc.
– Knowledge of reporting tools such as Cognos, Crystal Reports, Microsoft Reporting Services, etc.
– Knowledge of application analysis and design techniques
– Knowledge of analysis and design techniques and system modeling tools

Experience Requirements and/or Equivalents

Required:
– A minimum of three years of extensive, current experience programming including database programming.
– Experience working with relational databases, specifically Oracle or Microsoft SQL Server.
– Proven history with the development lifecycle (design, develop, test, document, integrate and support)
– Experience supporting production code/applications
– Familiarity with web technologies and web services such as HTTP, XML, CSS, REST and SOAP is necessary.

Preferred:
– Object-oriented programming in languages such as VB, C# or Java.
– Experience with Windows and Linux.
– Experience integrating and supporting applications.

Standard Work Days and Hours

This is an exempt position requiring time commitment necessary to satisfactorily complete job requirements. Hours are primarily Monday through Friday, 8:30 am to 5:00 pm with occasional evening and weekend work.

Position Summary

Responsible for the data reporting, programming, and interfaces functions with a leadership role within the Information Systems team. The position collaborates with customers at all levels of the organization.

Essential Job Functions

1. Supervises, mentors and provides technical leadership to team members.
2. Oversees work intake and prioritization; analyzes requirements and ensures expectations are aligned with deliverables prior to execution of work.
3. Defines quality control processes and ensures the quality and timeliness of work delivery to meet expectations.
4. Maintains current knowledge of departmental areas of expertise, including industry standards and best practice.
5. Ensures appropriate documentation of all work including design specifications.
6. Manages departmental projects and reporting.
7. Works with the team to resolve data quality problems through appropriate process design strategies, error detection and correction tests and procedures.
8. Finds areas to improve efficiency through process redesign and automation wherever appropriate.
9. Designs, establishes and maintains an organizational structure and staffing to effectively accomplish the organization's goals and objectives; recruits, employs, trains, and evaluates team resources as needed.
10. Interacts harmoniously and effectively with others, focusing upon the attainment of organizational goals and objectives through a commitment to teamwork.
11. Performs all other duties, as assigned by supervisor.

Knowledge, Skills and Abilities

1. Previous experience managing a team in a fast-paced, team-oriented environment.
2. Demonstrated experience prioritizing workload to best benefit organizational goals.
3. Experience gathering and analyzing statistical data and generating reports.
4. Proficiency in recognizing data deficiencies and errors.
5. Strong knowledge in personal computing and the Microsoft Office suite with particular strength in Microsoft Excel.
6. Keen attention to accuracy and detail.
7. Excellent verbal and written communication.
8. Exceptional problem-solving and critical thinking skills.
9. Knowledge of SQL and programming languages preferred.
10. Knowledge of healthcare practices preferred.

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 – ETC220 has very specific learning outcomes that are measurable. However, they are not mapped to specific assignments. The reviewer suggests mapping the outcomes to the direct assessments (4 exams, labs and the one assignment). Direct correlation to the learning outcomes and assessments are encouraged.

A.2 - The course prerequisites are indicated.

A.3 - Course objectives are measurable and well described.

A.4 - Learning objectives are aligned to industry standards.

A.5 – Activities are scaffolded and appear to build on one another.

**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 - Yes. The course competencies represent the industries expectations.

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 ten 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 - Yes. The purpose of the instructional materials was not explained; please clarify and include how information will be presented to students.

C.3 - Yes. A variety of projects were identified. The reviewer recommends small group projects to satisfy particular learning outcomes and encourage collaboration. Collaboration and Communication was a soft skill mentioned on the Burning Glass Data. It is advised and suggested to include more written and oral communication opportunities.

C.4 - Yes.

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

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	

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. Reviewer appreciates the lab activities mixed with theory; this is good balance and matches the job descriptions the reviewer found.

D.1 - Yes. Grading is broken into several components and provides opportunity for a variety of course activities, including technical presentations, exams, and assignments. The Reviewer applauds this variety and balance in grading. The chart was a nice visual.

D.2 - Yes. This is somewhat implied. The assessments (exams and exercises) appear to align with stated course-level objectives. This can be strengthened through describing this alignment. Reviewer suggests strengthening the tie between course activities/assessments to specific outcomes.

D.3 - This Reviewer did not find any specific or descriptive criteria that was provided for the evaluation of student work. As mentioned previously, this could be solved with a simple outline listing each assignment, the due date, total points possible, and a grading rubric (or link to). In order to encourage students, especially in this particular field, it would be best practice to list assignments and due dates early so students are prepared for their learning.

D.4 - This Reviewer found sequenced and varied grading strategies, including presentations, assignments, and labs with theory. The Reviewer encourages this variety.