COLLEGE OF AGRICULTURE AND APPLIED SCIENCES

SCHOOL OF APPLIED SCIENCE, TECHNOLOGY, AND EDUCATION

ASSESSMENT PLAN FOR:

Building Construction & Construction Management

FALL 2017
Building Construction and Construction Management Program Assessment

PROGRAM DESCRIPTION:

Building construction is the process of adding structure or construction of buildings. The majority of building construction jobs are small renovations, such as addition of a room, or renovation of a bathroom. Building construction projects typically include various common elements, such as design, financial estimating and legal considerations. Those with experience in the field make detailed plans and maintain careful oversight during the project to ensure a positive outcome.

The original Building Construction and Construction Management program began long ago as part of the Southeast Applied Technology College (SEATC). That institution, originally a Utah College of Applied Technology (UCAT), was absorbed into CEU in 2008. CEU merged with USU in 2010. When the SEACT became part of CEU and then CEU became part of USU in 2010, the four Building Construction and Construction Management programs continues to be administered through USU Eastern in Price.

Originally, there were four Building Construction and Construction Management programs working for the applied tech college administered out of Price in four southeast Utah communities – Price (Carbon County), Castle Dale (Emery County), Moab (Grand County), and Blanding (San Juan County). About 2010, after the CEU/USU merger, USU Eastern at Price transferred the administrative duties for the Building Construction and Construction Management program at the USU Eastern campus in Blanding to Guy Denton, and more specifically Justin Bergeman. In July 2015, the program and instructor in Price (Carbon County) was discontinued. In July 2016, program and instructor in Castle Dale (Emery County) was discontinued.

The Building Construction and Construction Management program in Moab (Grand County) is under the administration of USU Eastern in Price. Guy Denton and Justin Bergeman have continued the program at the USU Eastern campus in Blanding (San Juan County).

Core courses teach concepts and skills through the construction of a residential home. All concepts are taught with hands-on applications. Students complete the certificate program and have a basic knowledge in preparing and forming foundations and finish the program with the skills to finish the roof cap.

BUILDING CONSTRUCTION AND CONSTRUCTION MANAGEMENT LICENSURE

The goal of the Building Construction and Construction Management program is to produce a General Contractor that will meet Utah Division of Occupation and Professional Licensing (DOPL) requirement. A general contractor is responsible for the overall coordination of a project. They are responsible for providing all of the material, labor, equipment, and services necessary for the construction project. The Division of Occupational and Professional Licensing is the state agency that controls and regulates state licensing. DOPL requires a Utah Contractor's License for electricians, plumbers, inspectors and all other licensed occupations to protect the general public from fraud, misrepresentation, and safety issues for a Utah contractor's license.
There are over 50 Utah contractor’s license classifications that a student may apply for. The student needs to decide which classification is right for their professional goals. The experience requirements for each Utah contractor license, according to the Utah Contractor’s Board vary. For example, the categories of E100-General Engineering, B100-General Building, R100-Residential & Small Commercial Building require a minimum of two years full-time experience working for a licensed contractor, one of which needs to be in a supervisory or management position. For the categories S220-Carpentry, S280-Roofing, S290-Masonry, S320-Steel Erection, S350-HVAC, S360-Refrigeration, and S370-Fire Suppression Systems, a minimum of two years of full-time experience is required. The experience must be verified on the Affidavit of Experience form provided by DOPL with an employer’s signature.

INTEGRATED ACADEMIC SKILLS RECOGNITION
At the completion of the Building Construction and Construction Management program, students will be able to:

a) demonstrate knowledge of multiple trades, tool usage, and safety procedures
b) estimate labor, material and equipment for the maintenance function
c) manage a project, renovation or remodeling for a facility
d) theory as it relates to trade competencies
e) utilize recognized standard building codes guidelines as applicable
f) prepare and utilize isometric sketching and detailed drawings per individual trade
g) interpret residential and commercial blueprints
h) develop attitudes conducive to improved customer relations skills in the construction trades
i) demonstrate communication and critical thinking skills necessary for job advancement
j) use appropriate library and information resources to research professional issues and support lifelong learning
k) access library, computing, and communications services, and appropriately select information and data from regional, national, and international networks
l) represent, analyze and determine rules for finding patterns relating to linear functions, non-linear functions and arithmetic sequences with tables, graphs, and symbolic rules
m) adapt to new job requirements to qualify for advancement in becoming lead supervisors

The Building Construction and Construction Management Program offers a one year Certificate of Completion. A Certificate of Completion (CC) in Building Construction & Construction Management affords students the opportunity to earn 21 to 22 college credit and skills in a specialized area. Students can transfer certificate credits to degree programs. Students who complete the certificate program will have a basic knowledge in architectural drawings, floor layout, concrete, framing, drywall and roof systems, siding application, soffit and fascia applications, and the installation of siding, windows, doors, stairs and interior trim.
Building Construction Courses (Certificate of Completion 21 – 22 credits)

BCCM 1010 - Construction Safety  1-credit
BCCM 2010 - Framing I            2-credits
BCCM 2030 - Framing II           2-credits
BCCM 2080 - Concrete I           2-credits
BCCM 2090 - Concrete II          2-credits
BCCM 2100 - Interior Finish I    2-credits
BCCM 2110 - Interior Finish II   2-credits
BCCM 2170 - Exterior Finish I    2-credits
BCCM 2180 - Exterior Finish II   2-credits

Electives (choose two)
BCCM 1150 - Basic Print Reading   2-credits.
BCCM 2240 - Construction Estimating 3-credits
BCCM 2270 - Building Codes & Inspections 2-credits
CEE 2240 - Engineering and Surveying 3-credits
EDDT 1040 - CAD Level I: Intro to CAD 3-credits
EDDT 1100 - Residential Arch Drafting 3-credits
EDDT 2650 - Mechanical Blueprint Reading 2-credits

PROGRAM COMPETENCY PROFILE

(see next)
**PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION**

**Career Cluster: Architecture & Construction**

**Program Name: Carpentry/Carpenter**  
CIP: 460201  
National Standard: National Center for Construction Education Research

| Competencies (statement that provides the overview and defines the instructional area) | Knowledge, Content and Skills (what a student needs to know and be able to do and upon which they will be assessed) | English/Language Arts/Literacy: E  
Mathematics: M  
Science: S  
Art: A | Rating Scale - Sample Performance Assessments (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency) |
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| Understand safety procedures, methods, and concepts in using tools, equipment, and materials to establish and maintain a safe work environment. | 1. Identify and demonstrate the procedures and policies of safety of the trade.  
AAI 8. Health, Safety, and Environment: Explain the health and safety laws and practices affecting the employee, the surrounding community, and the environment in this industry. | 1 2 3 4 | For Example:  
You are a company foreman. A new employee shows up to the job with no safety equipment. You must inform the employee of the company safety procedures to be completed by taking an OSHA-10 course.  
(Continue to #2-4) |
| 2. Explain basic riggings and describe inspections techniques and load-handling safety practices with proper use of ladders and scaffolding. | | | |
| 3. Demonstrate use of appropriate personal safety equipment and proper use of emergency equipment: fire extinguishers, eye wash stations, first aid kits, blood pathogens. | | | |

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<td>Student will:</td>
<td>4. Explain the danger of chemical finishes and recognize hazard materials as associated with proper handling techniques and procedures; MSDS Sheets, Haz. Mat.</td>
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| **Understand the governmental regulations and applicable codes to assist with project planning.** | 5. Discuss and define ADA, OSHA, ICC, NHEC, RRP, Lead certifications, and what the code books look like.  
**AAI 8. Health, Safety, and Environment:** Explain the health and safety laws and practices affecting the employee, the surrounding community, and the environment in this industry. | **For Example:**  
You are a carpenter that has been hired by a customer to renovate a home built before 1978. What issues do you face in approaching this particular remodeling project that would not be present in new home construction? Prepare a report for the home owner. |
| 6. Describe the importance of professional ethics: employee/employer expectations. | **For Example:**  
You are a foreman on a job. You notice that one of your workers leaves the jobsite regularly for an extra ten to fifteen minutes during lunch. What key concepts would you approach this worker about? |

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Art: A | Rating Scale - Sample Performance Assessments (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency) |
|---|---|---|---|
| **Student will:** | **Understand concepts, procedures and methods in utilizing materials and fasteners for various applications.**  
7. Explain the terms commonly used to describe wood/lumber and discuss and identify lumber materials such as dimensional lumber, plywood, building boards and engineered wood products. | **1** **2** **3** **4**  
**For Example:**  
You have been hired by a homeowner who asks you about the products and materials you will be using to build their addition. You must explain to them how these particular building materials meet the appropriate building codes. (Continued to #8) | **1** **2** **3** **4** |
| | 8. Demonstrate proper selection and use of a variety of fasteners and adhesives. | | |
| **Understand the concepts and procedures in utilizing hand tools, power tools and equipment to form, separate, and combine construction materials.**  
9. Demonstrate proper, safety and use of commonly used hand tools.  
AAI 4. Technical and Production Skills: Identify specific production and technical skills required for this industry. | **1** **2** **3** **4**  
**For Example:**  
You are a company foreman. A new employee shows up the job with no safety equipment. You must inform the employee of the company safety procedures to be completed by taking an OSHA-10 course. (Continued to #10-11) | **1** **2** **3** **4** |
| | 10. Demonstrate proper use and safety of commonly used power tools, stationary power equipment and portable power equipment.  
AAI 4. Technical and Production Skills: Identify specific production and technical skills required for this industry. | | |

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<td>11. Discuss the operations and safety of heavy equipment including forklift training, man lifts, scissor lifts, skid steers, aerial lifts.</td>
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| Understand the concepts and terminology used in the building construction systems. | 12. Explain terms associated with footings and foundations and identify the use of footings, foundations and flatwork.  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. |  | 1 2 3 4 |
|  | **For Example:** You are a foundation contractor that is faced with a cellar hole that is out of grade level. Explain to the homeowner how you will do step footings to create the level footings for forms. |  |  |
|  | 13. Recognize elements and symbols of blueprints and drawings and use two- and three-dimensional drawings to convey information.  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. |  | 1 2 3 4 |
|  | **For Example:** You are building contractor with a set up plans for Mr. Smith, homeowner. You must go over the plans for his new house so that Mr. Smith understands the proper forms to fill out for any changes that will occur in the building process. Explain the costs and probability involved in every change the homeowner wants to incorporate into the initial plans. (continue to #14) |  |  |
|  | 14. Explain the purpose and components of contract documents and specifications (material lists, invoices, paperwork, and insurance requirements). |  | 1 2 3 4 |

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### PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION

**Career Cluster: Architecture & Construction**

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<td><strong>Understand the concepts, techniques and procedures of installation in order to install floor framing systems.</strong></td>
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<td><strong>For Example:</strong> You are doing a job for Mrs. Johnson who would like to remodel her kitchen and add a basement access. Draw up plans to show existing framing members and how they will be changed to accommodate the new stairwell.</td>
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<td>15. Identify floor, sill framing, support members and demonstrate accurate cutting and installation of joists (floor openings; chimneys, stairwells, pipe chasing etc).</td>
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<td><strong>For Example:</strong> In remodeling Mrs. Johnson’s kitchen, the contractor has discovered water rot under the flooring material in the subfloor. Demonstrate how the new subfloor will be installed.</td>
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<td>16. Describe how to install a subfloor.</td>
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<td><strong>For Example:</strong> As a contractor for Glen Construction you have been asked to build a panelized shed for the local garden club. You have to go to the site to determine the size that will fit the original concrete slab so you can pre-build the wall and ceiling trusses that will later be fitted on site. Illustrate the plans.</td>
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<td><strong>Understand the concepts and components of wall and ceiling layout in order to build walls and roof sections.</strong></td>
<td>17. Identify components of wall and ceiling layout and demonstrate how to cut studs, trimmers, cripples and headers to dimension in order to build wall sections including sheathing.</td>
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<td><strong>For Example:</strong> In building a new house, the owner has asked for rafters on the house and trusses for the garage. As the general contractor, you must illustrate to the homeowner why the roof on the house is 16 inches on center and the garage can be 24 inches on center.</td>
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<td>18. Identify roof framing members and demonstrate how to erect rafters and/or trusses and apply roof sheathing.</td>
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<td><strong>AAI 4. Technical and Production Skills:</strong> Identify specific production and technical skills required for this industry.</td>
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**Program Competency Profile for Career Technical Education**

**Career Cluster: Architecture & Construction**

**Program Name:** Carpenter/Carpentry  **CIP:** 460201  
**National Standard:** National Center for Construction Education Research

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| (statement that provides the overview and defines the instructional area)  
Student will: | (what a student needs to know and be able to do and upon which they will be assessed)  
Student will: | Mathematics: M  
Science: S  
Art: A | (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency)  
Student will: |
| Understand the various types of windows and doors in order to properly perform installation of windows and doors. | 19. Identify various window types and rating classifications and state the requirements for proper window installation (how it is made, what numbers mean on the sticker, etc. egress windows). | 1 2 3 4 |
| | 20. Identify various door types and common sizes and explain the correct installation procedure for doors (fire doors, etc.). | 1 2 3 4 |
| Understand the concepts, methods, techniques and materials used to apply roofing products. | 21. Explain the safety requirements for roof jobs, identify the materials and methods used in roofing, and discuss/demonstrate different techniques for installing roofing. (asphalt, wood, metal, standing seam).  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. | 1 2 3 4 |
| | 22. Discuss the types and styles of gutters and downspouts.  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. | 1 2 3 4 |

**For Example:**  
**For Example:**
You are a contractor asked to build an Energy STAR® home for Habitat for Humanity. You have to meet with the window manufacturer to determine which windows and doors will qualify for the Energy STAR® home audit. Create a report for the building inspector to show all codes were met for occupancy. (continue to #20)  
**For Example:**
You are a contractor for Harris Inc., and have been asked to do a strip and reroof for Mr. Scott. The job requires the use of the proper safety equipment (staging, harnesses, hard hats, etc.). Show Mr. Scott the safety plan and the different materials available to redo the roof and the benefits of each.  
**For Example:**
As a green builder contractor, you have hired to design a grey water reclamation system. What components and considerations need to go into the design?

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# PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION

## Career Cluster: Architecture & Construction

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<td><strong>Student will:</strong></td>
<td>23. Describe the characteristics of various types of insulation materials, vapor barriers and building wraps.</td>
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<td>24. Describe the types and applications of siding materials, demonstrate and discuss the installation of siding.</td>
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<td>25. Discuss how to meet new energy code standards.</td>
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<td><strong>Student will:</strong></td>
<td>26. Recognize types and uses of finish stair parts, and materials needed for a stair system (Handrails, balusters, etc.).</td>
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| | 27. Demonstrate how to install drywall (fire rock).  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. | 1 | 2 | 3 | 4 | For Example: As a general contractor, after reviewing the house plans you will be contacting the subcontractors to give you an estimate for the interior of the house (Cont. to # 28-30). |
| | 28. Identify various types of doors and jamb options. (interior, exterior, fire doors). | 1 | 2 | 3 | 4 |

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| **Student will:** | **29. Describe the process for placing and hanging a selected door.**  
**AAI 4. Technical and Production Skills:** Identify specific production and technical skills required for this industry. | | 1 2 3 4 |
| | **30. Identify the different types of standard moldings, describe their uses and recognize the proper techniques for installing interior trim.** | | 1 2 3 4 |
| | **31. State typical base and wall kitchen cabinet sizes and describe the process for installing kitchen cabinet sizes and identify various countertop products and installation techniques.** | | 1 2 3 4
| **For Example:**  
As a contractor, you have been hired to remodel a client’s kitchen; you will need to present a written bid to the client. | | |
| | **32. Discuss the types and application of different floor finishes and the suitability of each.** | | 1 2 3 4
| **For Example:**  
As a remodeling contractor you will be putting a new foyer in the basement. You will discuss with the home owner the many options. | | |

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**Student will:**

| Understand the fundamental concepts of entrepreneurship and how entrepreneurship influences the economy. | 33. Discuss and assess venture creation possibilities and identify the steps in planning the venture.  
**AAI 1. Planning:** Explain the key elements of a long-term plan for a successful company.  
**AAI 2. Management:** Discuss the different forms of management and ownership within this industry.  
**AAI 3. Finance:** Explain the key components of financial management of a company. | 1 2 3 4 | For Example:  
You are investigating starting your own business in the new green enterprise. You will be meeting with a SCORE representative to review your business plan. (Cont. to #34-36)  

| Student will: | 34. Identify the resources needed for venture startup and operation. | 1 2 3 4 |  
| | 35. Discuss the options in planning the venture’s future (growth, development, demise).  
**AAI 6. Labor Issues:** Explain the employees’ and employers’ rights and responsibilities in this industry.  
**AAI 7. Community Issues:** Discuss the ways a company can impact its community and the ways a community can impact a company. | 1 2 3 4 |  

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<td>36. Identify and discuss the traits and behaviors of an entrepreneur (leadership, personal assessment, personal management).</td>
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<td>Understand the importance of personal growth and leadership to enhance career success.</td>
<td>37. Discuss personal growth, community leadership, democratic principles and social responsibility (i.e. service learning, student organizations)</td>
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| Understand the necessary employability skills in order to achieve success in today's workplace. | 38. Decision-Making & Problem-Solving  
Demonstrate and apply good decision-making and problem-solving skills by outlining issues in situations/problems and determining, collecting, and organizing information needed in order to formulate a solution. | 1 2 3 4 |
| | 39. Self-Management  
Demonstrate and apply self-management skills by adhering to regulations, being responsible, and following through on commitments.  
**AAI 9. Personal Work Habits:** Explain the work habits an employer looks for in an employee in this industry. | 1 2 3 4 |

**For Example:**  
Your team has been hired to update the youth center. You must meet with the organizer to present your plans for the project.  
You have arrived at the job and no materials have arrived. What do you do with your workers for the day?  
As the general contractor it is your responsibility to keep track of the subcontractors. The plumber has contacted you that he is 3 weeks behind. How do you handle this with the client?

**Key: Rating Scale:**  
1 = NO EXPOSURE; 2 = NOVICE (Information was covered in class, but student cannot demonstrate skill or knowledge without significant supervision); 3 = PROFICIENT (Student regularly demonstrates the knowledge or skill); 4 = MASTERY (Student demonstrates successful completion of this skill numerous times without supervision.)
# PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION

## Career Cluster: Architecture & Construction

**Program Name:** Carpentry/Carpenter  
**CIP:** 460201  
**National Standard:** National Center for Construction Education Research

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Knowledge, Content and Skills</th>
<th>English/Language</th>
<th>Rating Scale - Sample Performance Assessments</th>
</tr>
</thead>
</table>
| (statement that provides the overview and defines the instructional area) Student will: | (what a student needs to know and be able to do and upon which they will be assessed) Student will: | • Arts/Literacy: E  
• Mathematics: M  
• Science: S  
• Art: A | (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency) Student will: |
| 40. Communication Skills: | Demonstrate and apply effective communication skills: verbal, written, visual, and listening | 1 2 3 4 | For Example:  
As an estimator you have been given a set of blueprints. You will create a budget and proposal and meet with the client to discuss conditions and details of the proposal. |
| 41. Ability to Work with Others: | Demonstrate and apply the necessary skills in order to work effectively with others. | 1 2 3 4 | For Example:  
As the foreman you have assigned the tasks to complete the project and one employee has does not understand why they were given that task and questions you. How would you address their questions? |
| 42. Information Use - Research, Analysis, Technology: | Demonstrate and apply the use of information through research, analysis, and technology.  
**AAI 5. Underlying Principles of Technology:** Explain through discussion the technological systems used within this industry. | 1 2 3 4 | For Example:  
As an energy efficient weather specialist you have to research the different types of insulation and materials to install an attic. You will present your findings to the client. |
| 43. Mathematical Concepts: | Demonstrate mathematical and computation skills as applied to real world situations. | 1 2 3 4 | For Example:  
As a roofer contractor your job is to estimate the roof covering for 3000 sq. feet in shingle and metal. Create a spreadsheet that shows the cost analysis of the project. |

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<td>44. General Safety:</td>
<td>Demonstrate and apply safe practices and procedures in the workplace.</td>
<td>Art: A</td>
<td>1 2 3 4</td>
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<td>For Example:</td>
<td>Sam and Eric work for a construction company. The company is constructing a new building. The company has hung a net to catch any falling parts during construction. During their break, Sam and Eric start to talk about a dangerous situation: holes in the net. You decide to go together to talk the foreman again about the holes in the net. What will you say to the foreman? What will the foreman say? Or, do you go talk to your union representative. What will you say? What will the union representative say? Write out your dialogue.</td>
<td></td>
<td></td>
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<tr>
<td>45. Career Development:</td>
<td>Demonstrate personal/career development skills by completing a career plan.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
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<td>For Example:</td>
<td>One of your work benefits includes furthering your education. You have decided you want to pursue courses at a postsecondary institution and will need to investigate what training/courses will assist you in gaining a promotion. You will outline a report and present it to your supervisor for his approval.</td>
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