SAINT LOUIS UNIVERSITY

Program-Level Assessment: Annual Report

Program Name (no acronyms): Brewing Science & Operations	Department:
Degree or Certificate Level: Undergrad, Certificate	College/School: School for Professional Studies
Date (Month/Year): June 2022	Primary Assessment Contact: John Buerck
In what year was the data upon which this report is based collected? Academic year 2021-2022	
In what year was the program's assessment plan most recently reviewed/updated? 2022	

1. **Student Learning Outcomes**
   Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the actual learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

   LO 1 - Apply the scientific processes (chemical, biological and physical) of brewing and fermentation.
   LO 2 - Describe the engineering operations components of a brewery.

2. **Assessment Methods: Artifacts of Student Learning**
   Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

   LO1
   BREW 1000 – Brewing Essentials – Final Project
   BREW 1500 – Brewing and Beer Styles – Final Project
   BREW 1750 – Conditioning, Packaging and Distribution
   BREW 2000 – Biochemistry of Brewing
   BREW 2500 - Flavor, Quality Control & Sensory Evaluation – Final Project
   BREW 2750 – Brewery Operations and Accounting

   LO2
   BREW 1000 – Brewing Essentials – Final Project
   BREW 1500 - Brewing and Beer Styles – Final Project
   BREW 1750 – Conditioning, Packaging and Distribution
   BREW 2500 – Flavor, Quality Control & Sensory Evaluation – Final Project

   **All courses were taught 100% online

3. **Assessment Methods: Evaluation Process**
   What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and include them in/with this report.

   Instructors have outcomes set up and added to their artifact rubric vis Canvas outcomes. At the end of their courses, a Canvas Outcomes report was run to collect data about student performance and artifacts used to assess learning outcomes. Data was used to analyze and make changes as needed to assessment of learning outcomes.

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

The Canvas outcomes reported that many of the artifacts had properly assessed student learning outcomes for their specific courses, but some minor adjustments might be needed; which will be explained further in section 5 of this report. Most instructors used final projects as their assessment tool and felt it was appropriate for the type of students in these classes.

More specifically, we found the following for each LO:

LO 1 – 117 total artifacts assessed
- Meets Standard - Student shows ability to demonstration knowledge of *either* beer style or sensory evaluation, but not both. – 76 students met this level
- Approaches Standard - Student shows ability to demonstration knowledge of *either* beer style or sensory evaluation, but not both. – 33 students met this level
- Does Not Meet Standard - Student does *not* demonstrate knowledge of beer style and sensory evaluation. – 8 students met this level

LO 2 – 92 total artifacts assessed
- Meets Standard - Student shows ability to demonstration knowledge of *either* beer style or sensory evaluation, but not both. – 68 students met this level
- Approaches Standard - Student shows ability to demonstration knowledge of *either* beer style or sensory evaluation, but not both. – 21 students met this level
- Does Not Meet Standard - Student does *not* demonstrate knowledge of beer style and sensory evaluation. – 3 students met this level

All courses were taught online, so there is no difference in teaching modality to note

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

As discussed in section 4, the data has largely supported that the learning outcomes have been supported by the artifacts chosen. However, there is always room for improvement. A major suggestions made by instructors about possible ways to strengthen learning outcomes and overall program is to create a new course that specific concentrates on quality control and management. This new course would take part of the BREW 2500 – Flavor, Quality Control & Sensory Evaluation course and expand on them.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

Faculty are provided with opportunities to share quantitative and qualitative feedback at the end of the term (eight week terms) they taught the course.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following: (Yellow highlights major changes)

Changes to the Curriculum or Pedagogies
- Course content
- Teaching techniques
- Improvements in technology
- Prerequisites

- Course sequence
- New courses
- Deletion of courses
- Changes in frequency or scheduling of course offerings

Changes to the Assessment Plan
- Student learning outcomes
- Artifacts of student learning
- Evaluation process

- Evaluation tools (e.g., rubrics)
- Data collection methods
- Frequency of data collection

Please describe the actions you are taking as a result of these findings.

The addition of a new course called BREW2600 – Quality Assurance and Quality Control in the Brewery.

If no changes are being made, please explain why.

NA

7. Closing the Loop: Review of _Previous_ Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

The Brewing program is now in its third year. In previous years, only minor modifications were made. This years assessment is the first major update to the certificate program.

B. How has this change/have these changes been assessed?

Via the normal assessment plan/process.

C. What were the findings of the assessment?

Minor tweaks.

D. How do you plan to (continue to) use this information moving forward?

It is planed to continue to use the current process (Canvas Outcomes) to collect data and then review, reflect, and make program updates as needed.

IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report.
See below:

Brew 1000 Final Project Rubric

BREW100: Final Project Rubric

Criteria	Ratings			Pts
Completeness & Depth	**15 pts** **Excellent** Fully answers all questions, demonstrating thoughtful self-reflection.	**8 pts** **Needs Improvement** Answers most questions, but only on a superficial level.	**0 pts** **Below Expectations** Minimal or no connection to topic.	15 pts
Readability	**15 pts** **Excellent** Paper is easy to read; the reader can understand sentences clearly when reading at a normal pace and does not have to reread any passages. The reader isn't distracted by any problems with grammar, spelling, and/or punctuation.	**8 pts** **Needs Improvement** Paper is easy to read in some places; reader can understand some sentences clearly when reading at a normal pace, though may have to reread several passages. Recurring problems with grammar, spelling, and/or punctuation distract the reader in several places.	**0 pts** **Below Expectations** Recurring problems with grammar, spelling, and/or punctuation interfere with the reader's ability to understand the paper's lines of reasoning.	15 pts
Organization	**15 pts** **Excellent** The paper is structured in a way that paragraphs flow easily and naturally; the organization of the paper is clear and logical; paper is clearly structured in a manner consistent with the assignment.	**8 pts** **Needs Improvement** There may be some organizational issues; there may be several instances of poor transition from one idea to another; still contains all required elements.	**0 pts** **Below Expectations** Major organizational issues exist; paper may lack several elements required by the assignment; there appears to be little flow among ideas.	15 pts
Flavor Evaluation Video	**15 pts** **Excellent** Video submission describes the home brew beer, addressing aroma, flavor, and aftertaste with descriptive terms and off-flavors.	**8 pts** **Needs Improvement** Video submission describes the home brew beer, but does not fully address aroma, flavor, and aftertaste using terms and off-flavors.	**0 pts** **Below Expectations** No video submission, or the video does not address an evaluation of the home brew beer.	15 pts
⊚ **BREW LO1** Describe and demonstrate the scientific processes (chemical, biological and physical) of brewing and fermentation. threshold: 5.0 pts	**5 pts** Meets Standard - Student can describe and demonstrate all three scientific processes (chemical, biological or physical) of brewing and fermentation.	**3 pts** Approaches Standard - Student can describe and demonstrate two scientific processes (chemical, biological or physical) of brewing and fermentation, but not all three.	**0 pts** Does Not Meet Standard - Student can describe and demonstrate only one scientific process (chemical, biological or physical) of brewing and fermentation, but not all three.	--
⊚ **BREW LO3** Demonstrate knowledge of beer style and sensory evaluation. threshold: 5.0 pts	**5 pts** Meets Standard - Student shows ability to demonstration knowledge of either beer style or sensory evaluation, but not both.	**3 pts** Approaches Standard - Student shows ability to demonstration knowledge of either beer style or sensory evaluation, but not both.	**0 pts** Does Not Meet Standard - Student does not demonstrate knowledge of beer style and sensory evaluation.	--

Total Points: 60

Brew 1500 Final Project Rubric

BREW 1500 Final Project Rubric
You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
Paper Paper must include: 1) An overview of journal entries to tell a 'story' of your brew. 2) What went well? 3) What problems did you have and how did you address them?	**30 pts** Met	**18 pts** Partially Met	**0 pts** Did not meet	30 pts
Presentation A video evaluation of your creation using proper terminology and off-flavor descriptions (as needed). The video can be under a minute, and needs to encapsulate the appearance, aroma, flavor, and aftertaste of your beer	**30 pts** Met	**18 pts** Partially Met	**0 pts** Did not meet	30 pts
⊚ **BREW LO1** Describe and demonstrate the scientific processes (chemical, biological and physical) of brewing and fermentation. threshold: 5.0 pts	**5 pts** Meets Standard - Student can describe and demonstrate all three scientific processes (chemical, biological or physical) of brewing and fermentation.	**3 pts** Approaches Standard - Student can describe and demonstrate two scientific processes (chemical, biological or physical) of brewing and fermentation, but not all three.	**0 pts** Does Not Meet Standard - Student can describe and demonstrate only one scientific process (chemical, biological or physical) of brewing and fermentation, but not all three.	--
⊚ **BREW LO2** Describe the engineering operations components of a brewery. threshold: 5.0 pts	**5 pts** Meets Standard - Student shows ability to describe all engineering operations components of a brewery.	**3 pts** Approaches Standard - Student shows ability to describe some engineering operations components of a brewery.	**0 pts** Does Not Meet Standard - Student cannot describe the engineering operations components of a brewery.	--

Total Points: 60

Brew 1750 Final Project Rubric

BREW1750 - Final Project
You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
Aroma Evaluation of a Control Sample - Video	5 to >3.0 pts Exemplary Malt, hops yeast and other significant aromatics are discussed.	3 to >1.0 pts Proficient Some, but not all, significant aromatics are discussed.	1 to >0 pts Below Expectations Few to no aromatic comments are discussed.	5 pts
Aroma Evaluation of a Punished Sample - Video	5 to >3.0 pts Full Marks Aromatic deviations from more than one punishment test are discussed.	3 to >1.0 pts Proficient Aromatic deviations from one punishment test are discussed.	1 to >0 pts Below Expectations Few to no aromatic deviations on any punished samples are discussed.	5 pts
Appearance Evaluation of a Control Sample - Video	5 to >3.0 pts Full Marks Beer color, clarity, opacity and foam characteristics are accurately discussed.	3 to >1.0 pts Proficient Some, but not all, visual characteristics are discussed.	1 to >0 pts Below Expectations Few to no visual characteristics are discussed.	5 pts
Appearance Evaluation of a Punished Samples - Video	5 to >3.0 pts Full Marks Deviations in flavor from more than one punishment test are discussed.	3 to >1.0 pts Proficient Deviations in flavor from one punishment test are discussed.	1 to >0 pts Below Expectations Few to no visual deviations in flavor are discussed.	5 pts
Flavor Evaluation of a Control Sample - Video	5 to >3.0 pts Full Marks Malt, hops yeast and other significant flavors are discussed.	3 to >1.0 pts Proficient Some, but not all, significant aromatics are discussed.	1 to >0 pts Below Expectations Few to no aromatics are discussed.	5 pts
Flavor Evaluation of a Punished Sample - Video	5 to >3.0 pts Full Marks Deviations in flavor from more than one punishment test are discussed.	3 to >1.0 pts Proficient Deviations in flavor from one punishment test are discussed.	1 to >0 pts Below Expectations Few to no visual deviations in flavor are discussed.	5 pts
Mouthfeel Evaluation of a Control Sample - Video	5 to >3.0 pts Full Marks Body and carbonation characteristics are discussed.	3 to >1.0 pts Proficient Some components of mouthfeel are discussed.	1 to >0 pts Below Expectations Mouthfeel characteristics are not discussed.	5 pts
Mouthfeel Evaluation of a Punished Sample - Video	5 to >3.0 pts Full Marks Deviations in mouthfeel from more than one punishment test are discussed.	3 to >1.0 pts Proficient Deviations in mouthfeel from one punishment test are discussed.	1 to >0 pts Below Expectations Mouthfeel deviations are not discussed.	5 pts
Punishment Procedure Write-Up Detail	10 to >7.0 pts Full Marks Detailed description is included in the write-up on how the samples were punished.	7 to >2.0 pts Proficient Some detail is provided in the write-up on how some of the samples were punished.	2 to >0 pts Below Expectations Little to no detail is provided in the write-up on how the samples were punished.	10 pts
Sensory Evaluation Process Write-Up Detail	10 to >7.0 pts Full Marks Detailed description is included in the write-up on how the sensory evaluation was conducted and the final characteristics of the control samples.	7 to >2.0 pts Proficient Some detail is provided in the write-up on how the sensory evaluation was conducted.	2 to >0 pts Below Expectations Little to no detail is provided in the write-up on how the sensory evaluation was conducted.	10 pts
Summary of Lessons Learned Write-Up	10 to >7.0 pts Full Marks Clear conclusions are drawn on the quality impacts of 3 or 4 of the punishment tests.	7 to >2.0 pts Proficient Clear conclusions are drawn on the quality impacts of 1 or 2 of the punishment tests.	2 to >0 pts Below Expectations Few conclusions are drawn on the quality impacts of the punishment tests.	10 pts
Write-up Points Assigned to the Final Project	20 to >14.0 pts Full Marks Demonstrates thoughtful self reflection. Opinions and ideas are clearly stated. No errors with writing style or mechanics.	14 to >6.0 pts Proficient Writing is somewhat superficial. Ideas are clearly stated, but grammar, spelling, and/or punctuation errors detract from the overall quality of the paper.	6 to >0 pts Below Expectations Minimal or no connection to topic. Difficult to understand due to grammar, spelling, and/or writing style.	20 pts
⊕ BREW LO2 Describe the engineering operations components of a brewery. threshold: 3.0 pts	5 pts Meets Standard - Student shows ability to describe all engineering operations components of a brewery.	3 pts Approaches Standard - Student shows ability to describe some engineering operations components of a brewery.	0 pts Does Not Meet Standard - Student cannot describe the engineering operations components of a brewery.	--

Total Points: 90

Brew 2000 Final Project Rubric

BREW2000: Brewing Project Rubric
You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
Completeness & Depth	15 pts **Excellent** Fully answers all questions, demonstrating thoughtful self-reflection	9 pts **Needs Improvement** Answers most questions, but only on a superficial level.	0 pts **Below Expectations** Minimal or no connection to topic	15 pts
Readability	15 pts **Excellent** Report is easy to read; the reader can understand sentences clearly when reading at a normal pace and does not have to reread any passages. The reader isn't distracted by any problems with grammar, spelling, and/or punctuation.	9 pts **Needs Improvement** Report is easy to read in some places; reader can understand some sentences clearly when reading at a normal place, though may have to reread several passages. Recurring problems with grammar, spelling, and/or punctuation distract the reader in several places.	0 pts **Below Expectations** Recurring problems with grammar, spelling, and/or punctuation interfere with the reader's ability to understand the paper's lines of reasoning.	15 pts
Organization	15 pts **Excellent** The report is structured in a way that paragraphs flow easily and naturally; the organization of the report is clear and logical; paper is clearly structured in a manner consistent with the assignment	9 pts **Needs Improvement** There may be some organizational issues; there may be several instances of poor transition from one idea to another; still contains all required elements.	0 pts **Below Expectations** Major organizational issues exist; report may lack several elements required by the assignment; there appears to be little flow among ideas	15 pts
Recording Observations	15 pts **Excellent** Picture/video submission describes the home brew beer, addressing the fermentation activity and other observations	9 pts **Needs Improvement** Picture/video submission describes the home brew beer, but does not fully address fermentation activity	0 pts **Below Expectations** No picture or video submission, or descriptions do not address an evaluation of the home brew beer	15 pts

Total Points: 60

Brew 2500 Final Project Rubric

Brew 2500 Final Project Rubric
You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
Aroma Evaluation - Video	3 pts **Exemplary** Malt, hops, yeast and other potential aromatics are discussed.	2 pts **Proficient** Some, but not all aromatics are discussed.	0 pts **Below Expectations** Few to no aromatics are discussed.	3 pts
Stylistics	2 pts **Exemplary** Few (0-2) grammatical and/or spelling errors.	1 pts **Proficient** Several (3-4) grammatical and/or spelling errors.	0 pts **Below Expectations** Five or more grammatical and/or spelling errors.	2 pts
Appearance Evaluation - Video	2 pts **Exemplary** Beer color, beer clarity, beer opacity and beer foam are all discussed accurately.	2 pts **Proficient** Some, but not all appearance requirements are discussed.	0 pts **Below Expectations** Few to no appearance requirements are discussed.	2 pts
Flavor Evaluation - Video	4 pts **Exemplary** Malt, hops, yeast and other potential flavors are discussed.	2 pts **Proficient** Some, but not all flavors are discussed.	0 pts **Below Expectations** Few to no flavors are discussed.	4 pts
Mouthfeel Evaluation - Video	2 pts **Exemplary** Body, carbonation and potential alcohol warmth of the beer is discussed.	2 pts **Proficient** Some components of the mouthfeel of the beer is discussed.	0 pts **Below Expectations** Few to no mouthfeel characteristics are discussed.	2 pts
Overall Impression - Video	3 pts **Exemplary** Drinking pleasure, accuracy to BJCP style, potential changes in ingredients or brewing process are all thoroughly discussed.	2 pts **Proficient** Some components of overall impression are discussed.	0 pts **Below Expectations** Few to no components of the overall impression are discussed.	3 pts
Proper Pour - Video	2 pts **Exemplary** The beer was poured properly into the glass.	1 pts **Proficient** The beer was shown being poured, but not properly.	0 pts **Below Expectations** The beer was never shown to be poured.	2 pts
Glassware - Essay	2 pts **Exemplary** Proper glassware is chosen and thoroughly discussed.	1 pts **Proficient** Glassware is chosen, but a reason is not explained.	0 pts **Below Expectations** No submission on glassware, or minimal content.	2 pts
Proper Storage - Essay	2 pts **Exemplary** Proper storage is discussed including location, time temperature. Temperature of proper service is discussed.	1 pts **Proficient** Some, but not all components of storage and serving temperature is accurately discussed.	0 pts **Below Expectations** Storage and serving temperature are inaccurately or not discussed at all.	2 pts
Off Flavors - Essay	3 pts **Exemplary** At least one off flavor is discussed including cause and potential changes to fix in the future.	2 pts **Proficient** Off flavors were mentioned, but reasons and potential fixes were not thoroughly explained.	0 pts **Below Expectations** Essay is lacking off flavors discussion.	3 pts
Beer and Food Pairing - Essay	3 pts **Exemplary** A food is chosen to pair with the beer with 3 well thought out reasons as to why it pairs.	2 pts **Proficient** A food is chosen to pair, but reasoning is incomplete.	0 pts **Below Expectations** No food is chosen or complete lack of reasoning.	3 pts
CBS or Final Test	8 pts **Exemplary** CBS or practice test is passed with 75% or above grade.	4 pts **Proficient** CBS or practice test is attempted, but is between 40-74% grade.	0 pts **Below Expectations** Test is not attempted or is less than 40%.	8 pts
⊘ BREW LO1 Describe and demonstrate the scientific processes (chemical, biological and physical) of brewing and fermentation. threshold: 3.0 pts	5 pts **Meets Standard** - Student can describe and demonstrate all three scientific processes (chemical, biological or physical) of brewing and fermentation.	3 pts **Approaches Standard** - Student can describe and demonstrate two scientific processes (chemical, biological or physical) of brewing and fermentation, but not all three.	0 pts **Does Not Meet Standard** - Student can describe and demonstrate only one scientific process (chemical, biological or physical) of brewing and fermentation, but not all three.	--
⊘ BREW LO3 Demonstrate knowledge of beer style and sensory evaluation. threshold: 3.0 pts	5 pts **Meets Standard** - Student shows ability to demonstration knowledge of either beer style or sensory evaluation, but not both.	3 pts **Approaches Standard** - Student shows ability to demonstration knowledge of either beer style or sensory evaluation, but not both.	0 pts **Does Not Meet Standard** - Student does not demonstrate knowledge of beer style and sensory evaluation.	--

Total Points: 36

Brew 2750 Final Project Rubric

Criteria	Ratings			Pts
Picture of existing building or empty lot	5 pts **Exemplary** Clear photo of building or undeveloped lot		0 pts **Below Expectation** No photo	5 pts
Intro overview paragraph	10 pts **Exemplary** Clear, concise introduction. 0-2 spelling and/or grammatical errors.	5 pts **Proficient** Some, but not all components of your brewery are summarized. 3-4 spelling and/ or grammatical errors.	0 pts **Below Expectations** No introduction/overview paragraph. Greater than 5 spelling and/or grammatical errors	10 pts
Vision/Mission Tag Line	5 pts **Exemplary** All three components are clearly described. 0-2 spelling and/or grammatical errors	3 pts **Proficient** One or two components are missing. 3-4 spelling and/or grammatical errors	0 pts **Below Expectations** None of the three points are described. Greater than 5 spelling and/or grammatical errors.	5 pts
Organizational structure	5 pts **Exemplary** Organizational structure is clearly described. 0-2 spelling and/or grammatical errors	2 pts **Proficient** Organizational structure is described but there are 3-4 spelling and/or grammatical errors	0 pts **Below Expectations** No organizational structure is described. Greater than 5 spelling and/or grammatical errors	5 pts
Management Summary	15 pts **Exemplary** Clear, concise management summary. 0-2 spelling and/or grammatical errors.	10 pts **Proficient** Some, but not all components of the management summary are described. 3-4 spelling and/ or grammatical errors.	0 pts **Below Expectations** No management summary submitted.	15 pts
Business Overview Business model chosen. Location/Neighborhood is Urban/Suburban. Seating. Décor. Parking.	30 pts **Exemplary** Clear, concise business overview with all topics described. 0-2 spelling and/or grammatical errors.	15 pts **Proficient** Some, but not all topics of the business overview are described. 3-4 spelling and/ or grammatical errors.	0 pts **Below Expectations** None of the business overview topics are discussed. Greater than 5 spelling and/or grammatical errors	30 pts
Products/Beers	5 pts **Exemplary** Beers (and food) to be produced are clearly described. 0-2 spelling and/or grammatical errors	3 pts **Proficient** Beers (and food) to be produced are described but there are 3-4 spelling and/or grammatical errors	0 pts **Below Expectations** No organizational structure is described. Greater than 5 spelling and/or grammatical errors	5 pts
Competition Nearby breweries with comparison (if applicable)	20 pts **Exemplary** Clear summary of potential competition. 0-2 spelling and/or grammatical errors.	10 pts **Proficient** Competition not clearly defined. 3-4 spelling and/ or grammatical errors.	0 pts **Below Expectations** No competition defined or attempt to defend position. Greater than 5 spelling and/or grammatical errors	20 pts
Market Analysis Site Assessment using the American Brewer's Guild guidelines. Nearby attractions.	15 pts **Exemplary** Clear site assessment using ABG's guidelines. Nearby attractions listed. 0-2 spelling and/or grammatical errors.	10 pts **Proficient** Site assessment less than clear. ABG's guidelines and nearby attractions listed. 3-4 spelling and/ or grammatical errors.	0 pts **Below Expectations** No site assessment with ABG's guidelines and no nearby attractions listed. Greater than 5 spelling and/or grammatical errors	15 pts
Marketing Strategy	5 pts **Exemplary** Clearly defined marketing strategy. 0-2 spelling and/or grammatical errors	3 pts **Proficient** Marketing strategy is defined but there are 3-4 spelling and/or grammatical errors	0 pts **Below Expectations** No marketing strategy defined. Greater than 5 spelling and/or grammatical errors.	5 pts
Itemize Brewery Equipment	10 pts **Exemplary** Clearly defined itemized list of brewery equipment with costs	5 pts **Proficient** Defined list of brewery equipment. May or may not define cost.	0 pts **Below Expectations** No listing of brewery equipment or no defined cost of the equipment.	10 pts
Total sales Separate beer and food if applicable	10 pts **Exemplary** Total sales calculated with separation of beer from food if applicable. 0 mathematical errors	5 pts **Proficient** Total sales calculated however there is a mathematical error present	0 pts **Below Expectations** No total sales calculated	10 pts
Itemized cost breakdown	15 pts **Exemplary** Clearly defined itemized list of operational costs. 0-2 potential items missing	8 pts **Proficient** Defined list of itemized costs. 3-4 items missing	0 pts **Below Expectations** No listing of itemized operational costs, or greater than 5 items missing	15 pts
Seasonally adjusted sales estimates by month for the first 5 years	30 pts **Exemplary** Clearly defined seasonally adjusted sales estimates for the first 5 years. 0-2 mathematical errors	15 pts **Proficient** Defined seasonally adjusted sales estimates for the first 5 years. 3-4 mathematical errors or only 1-4 years estimated.	0 pts **Below Expectations** No seasonally adjusted sales estimates or only one year sales estimates or greater than 5 mathematical errors	30 pts
Break even sales amount by month, week and day	10 pts **Exemplary** Clearly defined break even sales amount by month, week and day. 0 mathematical errors	5 pts **Proficient** Defined break even sales amount by month, week and day. 1-2 mathematical errors	0 pts **Below Expectations** No break even sales amount calculated or greater that 3 mathematical errors.	10 pts
⊘ BREW LO4 Demonstrate the professional skills to develop, implement and manage a startup business. threshold: 3.0 pts	5 pts **Meets Standard** - Student can demonstrate the professional skills in all the following areas: developing a startup business, implementing a startup business, or managing a startup business.	3 pts **Approaches Standard** - Student can demonstrate the professional skills in two of the following areas: developing a startup business, implementing a startup business, or managing a startup business.	0 pts **Does Not Meet Standard** - Student can demonstrate the professional skills in only one of the following areas: developing a startup business, implementing a startup business, or managing a startup business.	--

Total Points: 190