**Occupational Endorsement Certificate**

Fermentation Science

**Academic Assessment Plan**

**Adopted by**

**The Biology faculty: 01/19/2024**

Reviewed with curriculum by the college curriculum committee: 2/7/24

Reviewed with curriculum by the dean: 2/7/24

Reviewed with curriculum changes by the Academic Assessment Committee: 2/16/24

Reviewed by the Faculty Senate as an information item: 3/2/24

# Mission Statement

The mission of the Fermentation Science program is to provide students with the skills and knowledge necessary for successful employment as an entry-level brewer in the Craft Brewery or similar industry through hands-on training and coursework.

# Program Introduction

In this 27-credit university credential, students will learn about fermentation science in a hands-on environment. The program of study includes microbiology courses, the focus of which will be on exploring the real-world application of fermentation, as well as coursework and practical experience in sensory evaluation and beverage management, among others. Through internships, the students will work with local businesses doing real-time brewing, quality control, and sanitation. This program enables students to connect theory to practical and actual real world experience.

# Program Student Learning Outcomes

Students graduating with an OEC in Fermentation Science will be able to:

1. Define the quality attributes of fermented foods and beverages and connect these key contributors to specific examples
2. Summarize and explain the chemistry and microbiology of fermentation and brewing
3. Identify and practice the technical aspects of commercial brewing
4. Communicate effectively in a variety of contexts and formats

# Measures

Table 1: Assessment Measures, Learning Outcomes, Collection Method and Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tool** | **PSLO** | **Frequency** | **Collection Method** | **Administered by** |
| Measure 1:Course Assignments, Exams, or Projects | 1-4 | Alternating Years | Courses | Faculty\*  |
| Measure 2: Internship Exit Interview | 3-4 | Alternating Years  | BIOL A395 | Internship Mentor\* |
| Measure 3: Pre/Post-Self-reflection and Siebel Online Assessment Pre/Post Program | 1-3 | Annually, upon inception and exit. | Entrance & Exit Requirement  | Faculty |

\*Conducted & collected by the course instructor/internship mentor, delivered to the Biological Sciences Assessment Program for tabulation, analysis, & reporting.

Measure descriptions

## Course Assignments, Exams, or Projects

The program assessment will include student performance analyses on appropriate course assignments.

## Pre/Post Instrument

Students will also complete the Siebel Institute Online Assess Your Level of Knowledge as they enter the program and upon completion of required courses.

## Exit Interview

Further, the internship mentor will conduct an exit interview.

# Process

*Course level assessment:* Student assessment will be carried out throughout the program within several required courses. The faculty of the individual courses will collect specific course-level artifacts in alternating years.

Table 2: PSLOs Timeline & Courses

|  | BIOL A107Fermentation Science | CA A104Sanitation | CA A114Beverage Management | MBIO A251 Microbiology of Fermented Foods and Beverages | MBIO A200 Experiential Learning in Fermentation Science | BIOL A395Internship |
| --- | --- | --- | --- | --- | --- | --- |
| PSLO 1 | **x** | **-** | - | **x** | **x** | **-** |
| PSLO 2 | **x** | **-** | **-** | **x** | **x** | **-** |
| PSLO 3 | **-** | **x** | **-** | **x** | **x** | **x** |
| PSLO 4 |  | **-** | **x** |  |  | **x** |

*Program assessment:* Program assessment will begin upon implementation of the program for reporting two years after the program begins, and will continue each subsequent year.

The Biological Sciences Assessment Committee will collect and analyze the program-level assessment instruments. As part of ongoing program improvement, the assessment reports will be drafted and shared with the instructors and industry partners at least once every other year, and the program’s success and/or possible improvements based on these lines of evidence will be discussed. Individual courses, program goals, and practices will be modified for the next iteration. Changes may include:

* Individual course design
* Faculty teaching roles
* Student assignments
* Roles of external content experts
* Training facilities

Program faculty will also regularly meet with stakeholders to ensure training is up to date with their employment needs. These meetings will occur before the beginning of each new implementation.

Program faculty will also review the assessment plan after each reporting cycle and review the type and mode of data collection and analysis. Any suggested changes will be included in a modified assessment plan and submitted to the dean’s office and Office of Academic Affairs.