**Certificate of Proficiency in Brewing Science (BREWCP)**

This program is designed to provide students with a theoretical and practical introduction to brewing and fermentation. This certificate requires 15 credit hours of coursework, selected from the list below.

**REQUIRED COURSES – 9 hours**

\_\_\_FDSC 4422/5522Introduction to Brewing Science

\_\_\_BIOL 2723L Microbial Fermentation Laboratory or BREW 4573/5573

\_\_\_Required internship, special problems, or honors research project – 3 hours course credit

Internship: Students could participate in an approved three credit hour internship with a

brewing industry partner. The internship should involve approximately 120-130 hours of work

with the industry partner. The internship work can be completed in one semester or over

multiple semester with enrollment during the final semester. At the end of the final semester of

the internship, students would have to present a written and oral report of the work performed

and lessons learned.

Special problems or research hours: Students could complete three credit hours working on a

practical research problem under the supervision of a faculty member in FDSC, BISC, CHEM,

BENG or CHEG. The topic of this work should be approved for relevance to the certificate before

the work begins and reviewed if it changes substantially during the course of the work. Work

that involves industry partners is particularly encouraged. At the end of the final semester of the

work, students would have to present a written and oral report of the work performed and

lessons learned. Credit hours and work done for an honors degree can satisfy this requirement,

but if honors work is used, it must include at least one credit hour in three different semesters.

**ELECTIVE COURSES – 6 hours**

Select at least two courses from the list below. To broaden the student’s exposure to the skills needed in brewing and fermentation, for currently enrolled undergraduate students, *at least one of these courses must be in a different department from the department of the student’s major, and that course must also be outside of those already required for the student’s major(s)*. If the student already holds a degree, the course must be a new one outside of the previous degree program.

Courses to choose from:

\_\_\_BIOL 2013 General Microbiology *OR* BIOL 3123 Prokaryote Biology

\_\_\_BIOL 2533 Cell Biology *OR* BIOL 2323 General Genetics

\_\_\_CHEM 2613 Organic Physiological Chemistry *OR* CHEM 3613 Organic Chemistry II

\_\_\_ **CHEM 2263. Analytical Chemistry Lecture**

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\_\_\_FDSC 2741 Introduction to fermented beverages.

\_\_\_FDSC 3103 Principles of Food Processing

\_\_\_FDSC 2523 Sanitation and Safety in Food Processing Operations

\_\_\_FDSC 4122 Food Microbiology

\_\_\_ FDSC 4413 Sensory Evaluation of Food

\_\_\_CHEG 2133 Fluid Mechanics

\_\_\_CHEG 3144 Heat and Mass Transfer

\_\_\_BENG 3113 Measurement and Control for Biological Systems

\_\_\_BENG 3733 Transport Phenomena in Biological Systems