**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 4523/5523 – Brewing Science
___ BIOL 4723L Microbial Fermentation Laboratory (no longer offered) or BREW 4573/5573 Production design and analysis of Beer
___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
___FDSC 2741 - Brewing Brilliance: Exploring the General Science of Fermented Beverages (Beer, Wine, and Spirits)
___FDSC 2401 Uncorked: Vines to Wines
___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