LETTER OF NOTIFICATION – 8

UNDERGRADUATE CERTIFICATE PROGRAM

(6-21 semester credit hours)

1. Institution submitting request: University of Arkansas Fayetteville

1. Contact person/title: Dr. Terry Martin, Senior Vice Provost for Academic Affairs
2. Phone number/e-mail address: (479) 575-2151/tmartin@uark.edu
3. Proposed effective date: Fall 2019
4. Name of proposed Undergraduate Certificate Program (Program must consist of 6-21 semester credit hours): Brewing Science Certificate of Proficiency
5. Proposed CIP Code: 01.1002 Food Technology and Processing
6. Reason for proposed program implementation:

In 1978, there were only 42 companies brewing beer in the United States. Today there are in excess of 2,000 brewpubs and 4,000 micro or regional breweries in the United States, employing well over 100,000 people. According to the Brewers Association, the craft brewing industry in the United States had sales revenues in excess of $26 Billion in 2017. Craft brewed barrels, 12.7% of the beer market, grew last year by 5.0% while overall barrels of beer brewed fell by 1.2%.

In 2017, Arkansas had just 35 small breweries, 1.6 breweries per 100,000 21+ adults, which ranks us as 41st in the nation in breweries per capita, and brewed only 0.6 gallons in craft beer per 21+ adult, for a ranking of 47th. While small breweries had an economic impact in Arkansas of $406 million total and $191.60 per capita, this only ranked us at 46th in the country in per capita terms.

Clearly, there is the potential for much growth in the industry in Arkansas. For example, if we hit the national median of 2.5 breweries per capita, we would expect to see another 18 to 20 breweries open in the state. A good supply of qualified workers is needed if such growth is to be realized, so the proposed certificate would benefit both recipients and local industry.

In addition to those seeking employment, there is a large degree of interest in homebrewing as a hobby. It is estimated that there are 1 to 1.2 million homebrewers in the United States, which translates into approximately 10,000 in Arkansas. This population is another that might be interested in formal study of brewing.

1. Provide the following:
	* 1. Curriculum outline - List of courses in new program – Underline required courses

FDSC 2723 – Introduction to Brewing Science (3 hours)

BIOL 2723L – Laboratory in Microbial Fermentation (3 hours)

Internship/Special Problems (3 hours)

Elective Courses (6 hours) from the following:

 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

 BENG 3113 Measurement and Control for Biological Systems

 BENG 3733 Transport Phenomena in Biological Systems

 CHEG 2133 Fluid Mechanics

 CHEG 3144 Heat and Mass Transfer

 FDSC 2523 Sanitation and Safety in Food Processing Operations

 FDSC 2603 Science in the Kitchen

 FDSC 3103 Principles of Food Processing

 FDSC 4122 Food Microbiology

In order to broaden the student’s background and exposure to other disciplines relevant to brewing, at least one course from the list of elective courses above must be from another department and outside of courses required for the student’s major.

* + 1. Total semester credit hours required for proposed program (Program range: 6-21 semester credit hours)

15 credit hours

* + 1. New courses and new course descriptions

FDSC 2723 – Introduction to Brewing Science

An introduction to the biology and chemistry of fermentation, with an emphasis on beer brewing. Styles, flavors, and quality characteristics of beer will be discussed. The history, legal aspects, and economic impacts of homebrewing as well as craft and industrial brewing will be covered. One or more field trips to breweries will be part of the class. Pre-requisites: University Chemistry II, CHEM 1103, or Fundamentals of Chemistry, CHEM 1073. Principles of Biology, BIOL 1543

BIOL 2723L – Laboratory in Microbial Fermentation

A hands-on introduction to the processes of beer brewing. Pre- or co-requisite: FDSC 2723, Introduction to Brewing Science

* + 1. Program goals and objectives

This certificate program will provide graduates with improved job opportunities in the craft brewing industry. The certificate also is designed to support the craft beer industry in Arkansas.

* + 1. Expected student learning outcomes

At the end of this program students will be able to:

1. Describe the basic history, legal aspects, and economic impacts of brewing and fermentation.

2. Describe the basic chemistry and biology of fermentation and brewing.

3. Conduct basic fermentation processes and carry out basic brewing industry practices.

* + 1. Documentation that program meets employer needs

This program was developed with the aid of Jesse Core of Core Brewing. Mr. Core is very interested in hiring anyone who completes the certificate program. In addition, the fact that it meets the guidelines of the Master Brewers Association (see below) is further evidence that it meets employer needs.

* + 1. Student demand (projected enrollment) for proposed program

The special topics courses on which the two proposed courses are based have readily filled each year, so we anticipate that enrollment will be space, rather than demand, limited. Initially we will accommodate 12-24 students each year in the two core courses.

* + 1. Program approval letter from licensure/certification entity, if required

NA

The only organization we are aware of that accredits brewing programs is the Master Brewers Association. Their requirements are listed here: <https://www.mbaa.com/education/Pages/HEC.aspx>

For a certificate the requirements are as follows:

Certificate Program: A certificate in brewing is generally required (along with other requirements) by the brewing industry for entry-level cellar, packaging, and maintenance jobs and is distinguished from a two year program by its focus on a general overview of the brewing industry, providing an understanding of day-to-day brewery operations and basic principles used on the job (e.g., cleaning, sanitation, brewing science). The minimum amount of time recommended for a certificate program is 10–18 weeks, with time spent as an intern in a brewery either during or after the program. Completion of a certificate program in brewing should provide graduates with the ability to start in an entry-level brewery position.

Those being awarded a certificate by this program will meet the suggested guidelines of the Master Brewers Association if they chose to do the internship in a brewery.

* + 1. Name of institutions offering similar programs and the institution(s) used as model to develop proposed program

NA

* + 1. Scheduled program review date (within 10 years of program implementation)

2025

1. Institutional curriculum committee review/approval date: January 16, 2019
2. Will this program be offered on-campus, off-campus, or via distance delivery? If yes, indicate mode of distance delivery. Mark \*distance technology courses.

On campus except for students choosing to do an off-campus internship in a brewery.

1. Identify off-campus location. Provide a copy of email notification to other institutions in the area of the proposed off-campus program offering.
2. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date: January 21, 2019

Board of Trustees Notification Date: March 28, 2019

Chief Academic Officer: James S. Coleman Date: January 10, 2019