

MEMORANDUM

Date: 12 January, 2021

To: Dr. Joe Schaffer, President

From: Dr. Kari Brown-Herbst, Interim Vice President, Academic Affairs

CC: Members, President's Cabinet
Dr. Kelly Humphrey, Dean, ACC Student & Academic Services

Re: Craft Brewing Credit Diploma



As a result of our Guided Pathways initiative the College has committed to offering academic programs that are clear and intentional in design to meet students' goals in employment or further education. It is with respect for these tenets that I seek approval for a new Credit Diploma in Craft Brewing. The structure of the proposed program is outlined briefly in this memo. Additional detail is provided in the Wyoming Community College Commission's Program Action Form, appended to this memo, as well as the Budget Worksheet compiled with assistance from LCCC's Budget Office. Finally, industry partners have offered their letters of support for the program and that documentation is also attached.

PROGRAM OVERVIEW:

The Craft Brewing credential is designed to provide an applied-learning path to students aged 21 and over who are interested in a career in the brewing industry. The curriculum has been planned for online delivery with the program culminating in a 5-credit internship working in a regional craft brewery. The credential can be earned in a single academic year.

PROGRAM OUTCOMES:

The program has completed the required development and review process and the curriculum has received approval of the Academic Standards Committee. The Credit Diploma is comprised of 29 credits.

Upon successful completion of the Credit Diploma, students will be able to:

1. Recognize the characteristics of ingredients that affect the quality of a beer.
2. Use standard commercial brewery equipment to brew quality beer.
3. Describe all steps to turn raw materials into beer.
4. Use industry-recognized standard methods to ensure quality at each step of the brewing process.
5. Assess the qualities of a finished beer using industry-recognized standard methods and instruments.
6. Summarize standard sanitary procedures that address threats to beer quality.
7. Identify correct techniques used to finish and package different styles of beer.
8. Explain processes within the operations of a brewery.

Students will have the opportunity to meet these outcomes through the following program sequence:

Craft Brewing Credit Diploma Program Sequence		
1st Semester, FALL		
BREW 1500	Safety and Sanitation for Fermentation	3
BREW 1510	Craft Beer Styles and Sensory Evaluation	3
BREW 1520	Beer Essentials: Grains	1
BREW 1530	Beer Essentials: Hops	1
BREW 1540	Beer Essentials: Water	1
BREW 1550	Beer Essentials: Microbes and Fermentation	1
BREW 1560	Beer Essentials: Adjuncts and Specialty Ingredients	1
BREW 1570	Beer Essentials: Recipe Development	1
Semester Total:		12
2nd Semester, SPRING		
BREW 1580	Brewing I: Raw Materials to Wort	4
BREW 1590	Brewing II: From Wort to Finished Product	4
BREW 1600	Brewery Operations	4
Semester Total:		12
2nd Semester, SPRING		
BREW 1970	Craft Brewing Internship	5
Semester Total:		5

STAFFING IMPACT:

We anticipate all instructional responsibilities to be shouldered by experienced brewers and others currently working in the industry serving the College as adjunct faculty.

BUDGET IMPACT:

Limited budget impacts are anticipated, primarily in the area of supplies.



PROGRAM ACTION FORM

College	Laramie County Community College					
Date	01.05.2021					
Program Request for	<input checked="" type="checkbox"/> New Program		<input type="checkbox"/> Modified Existing Program		<input type="checkbox"/> Discontinue an Existing Program	
Program Title	Craft Brewing					
Type of Credential	<input type="checkbox"/> AA	<input type="checkbox"/> AS	<input type="checkbox"/> AFA	<input type="checkbox"/> AAS	<input type="checkbox"/> Cert	<input checked="" type="checkbox"/> Other Credit Diploma
Total Credit Hours:	29					
CIP Code and Title	CIP Code (6 digits): 01.1003			Brewing Science		
<small>(Classification of Instructional Programs/CIP obtained from the National Center for Educational Statistics at https://nces.ed.gov/ipeds/cipcode/browse.aspx?v=55 double check your recommendation with the records office)</small>						

Rationale for request <small>(New, modified or discontinued)</small>
<p>List state priorities addressed by program; pertinent partnerships; coordination with citizens; business; industry; non-profit organizations; or K-12 education; if applicable:</p> <p>The Craft Brewing Credit Diploma is intended to be an online program that will serve students in the College service area, across Wyoming, and throughout the region. There is strong support of the program from the LCCC Craft Brewing Advisory Council, and with Wyoming Craft Brewers Guild (see attached.) Support was also demonstrated through the responses to the survey that was distributed by the LCCC Craft Brewing Advisory Council to brewers in the region.</p> <p>One of the growth areas in Wyoming and the surrounding regions is fermentation science, particularly craft brewing. Based on a survey conducted of craft breweries in Wyoming and the surrounding states, estimated job growth in the next two years has a mean value of 145 jobs. By 2024, the mean value of estimated growth is 344 jobs, and by 2028, the mean value of estimated growth is 606 jobs. The program is being proposed to address needs in a rapidly growing field that has been shown to remain strong during financial recessions.</p> <p>In lengthy discussions and meetings with the LCCC Craft Brewing Advisory Council, the guidance received directed us to develop a curriculum that would train students in the fundamentals of craft brewery work. Additionally, the Advisory Council recommended we include substantial on-the-job opportunities. For that reason, an internship component has been included in the</p>

curriculum, as well as on-site observations. This will also ensure that students in the program are being connected with local employers.

Once seen as a hobby, the Craft Beer Production industry has transformed into one of the fastest-growing and most popular alcoholic beverage segments in the United States. Industry revenue has increased at an annualized rate of 4.4% to \$7.6 billion over the five years to 2020, including estimated growth of 2.1% in 2020 alone (IBISWorld.com).

The North America Craft Beer Market is worth US \$45.03 million in 2020, and it is estimated that it will reach a valuation of US \$121.69 million by the end of 2025, registering at an annual growth rate of 22% between 2020 and 2025 (Marketdataforecast.com).

The craft beer market is projected to register a Compound Annual Growth Rate (CAGR) of 14.1% during the forecast period (2020 - 2025) (mordorintelligence.com). CAGR is one of the most accurate ways to calculate and determine returns for anything that can rise or fall in value over time (investopedia.com).

Type of Program	<input type="checkbox"/> Transfer preparation <input type="checkbox"/> Short term workforce placement <input checked="" type="checkbox"/> One-year workforce placement <input type="checkbox"/> Special need endorsement
Certificate Questions <i>More than one may apply</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No local or state employer or industry specific <input type="checkbox"/> Yes <input type="checkbox"/> No nationally recognized <input type="checkbox"/> Yes <input type="checkbox"/> No examination or licensure preparation <input type="checkbox"/> Yes <input type="checkbox"/> No practicum <input type="checkbox"/> Yes <input type="checkbox"/> No stackable Title IV Financial Aid Eligible <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (minimum of 16 semester hrs) <i>(Stafford Loans, Perkins Grants, Pell Grants and Federal Campus-based Grants)</i>
New program start	<input type="checkbox"/> NA OR identify the semester the program will start: Fall 2021
Taught by non-accredited vendors?	<input type="checkbox"/> YES (see below) <input checked="" type="checkbox"/> NO
WCCC or State Priority	<input checked="" type="checkbox"/> YES (see below) <input type="checkbox"/> NO <i>(See the WCCC website, there are several programs which have a state priority, such as the Governor's Economically Needed Diversity Options for Wyoming/ENDOW)</i> This program aligns with Tourism and Recreation, which the ENDOW Initiative identifies as a pillar for economic opportunity and job growth. WCCC Statewide Strategic Plan Goal 1: Credential Attainment. This program will provide an additional opportunity for people currently in craft brewing in Wyoming, or people interested in pursuing craft brewing to earn an educational credential that will provide them value in the craft brewing industry.

	<p>Goal 3: Program Alignment. This program was developed in complete cooperation of the brewing industry and is being supported by the Wyoming Craft Brewers Guild.</p> <p>Goal 4: Economic Development. This program will help to diversify employment opportunities, and assist in growing the craft brewing industry in the state.</p>				
Program Curriculum					
<i>Program Description</i>	The Credit Diploma in Craft Brewing provides a unique experience grounded in applied science culminating with a 5-credit brewery internship. Courses are taught by experienced brewers and others currently working in the industry. The Craft Brewing program is designed to prepare students for employment in the brewing industry. Students must be 21 years of age or older prior to the start of the first program course.				
<i>Recommended Change</i>	<input checked="" type="checkbox"/> NA OR Type the proposed change to the description below				
<i>New Curriculum</i>	<input checked="" type="checkbox"/> YES (see below) <input type="checkbox"/> NO				
<i>List the new courses alphabetically. Include prefix, course number, course title, credit hours (add more rows to the table if needed). Check the Wyoming Transfer Catalog for possible courses and numbers then contact your registrar regarding the suggested numbers.</i>					
Considerations	Prefix	Number	Title	Credits	LOI
Includes New Course? Y					
Y	BREW	1500	Safety and Sanitation for Fermentation	3	1
	Students identify rules, regulations, and practices related to workplace safety in the fermentation industry. Students also become knowledgeable in standard brewery sanitation procedures including Clean-in-Place (CIP).				
Y	BREW	1510	Craft Beer Styles and Sensory Evaluation	3	1
	Students learn and practice analysis of fermented beverages for quality and adherence to standard style guidelines. Focus is placed on addressing both characteristics and flaws that occur as a result of the raw materials used as well as the brewing, fermentation, and/or sanitation processes. Includes discussion of the chemistry and biochemistry of off flavors and methods to avoid future issues. Students acquire knowledge of the history and characteristics of standard beer styles. Students will be qualified to take the Beer Judge Certification Program tasting exam after successful completion of this course.				
Y	BREW	1520	Beer Essentials: Grains	1	1
	Students explore the characteristics of grains used in craft brewing and the processes used to prepare grains for use in brewing.				
Y	BREW	1530	Beer Essentials: Hops	1	1
	Students explore the characteristics of hops used in craft brewing and the processes used to grow, harvest, and prepare hops for use in brewing.				
Y	BREW	1540	Beer Essentials: Water	1	1
	Students explore the role that water plays in craft brewing. Students gain knowledge in the standard practices for testing and adjusting water for brewing.				
Y	BREW	1550	Beer Essentials: Microorganisms and Fermentation	1	1
	Students develop understanding of the biology and characteristics of yeast and other microorganisms used in craft brewing. Students gain hands-on experience working with yeast, and practice proper sanitary techniques for working with microorganisms.				

Y	BREW	1560	Beer Essentials: Adjuncts and Specialty Ingredients	1	1
	Students acquire knowledge about adjuncts and specialty ingredients commonly used in craft brewing.				
Y	BREW	1570	Beer Essentials: Recipe Development	1	1
	Students integrate knowledge of the ingredients of beer gained in previous Beer Essentials courses to develop recipes for craft brewing. Students gain experience in using brewing software for performing calculations for recipe development.				
Y	BREW	1580	Brewing I: From Raw Materials to Wort	4	2
	Students learn and practice the principles and methods of creating wort from raw materials. Students will gain hands-on experience in creating wort from raw materials using homebrewing equipment in their own homes. Observations in commercial craft beer facilities will also be required.				
Y	BREW	1590	Brewing II: From Wort to Finished Product	4	2
	Students learn and practice principles and methods of converting cooled wort into packaged beer. Students will gain hands-on experience in creating finished beer from cooled wort using homebrewing equipment in their own homes. Observations in commercial craft beer facilities will also be required.				
Y	BREW	1600	Brewery Operations	4	2
	Students learn standard operating procedures for day-to-day work in commercial craft breweries. Students examine the business practices of craft brewing operations including marketing of products.				
Y	BREW	1970	Craft Brewing Internship	5	3
	Students apply skills and knowledge learned in previous courses to work as a member of a brewing team in a partner microbrewery.				
Did you coordinate w/CCs?	The LCCC Course Coordinator confirmed the availability of the prefix and number sequences indicated above.				
TOTAL CREDITS				29	

(WCCC has a statewide common course numbering system, ensure that you have met with the records office prior to your submission to identify appropriate new course numbers for your program. This process may take up to a week to receive confirmation of the numbers)

Similar programs in Wyoming? (See WCCC Program List)	<input type="checkbox"/> YES (list below) <input checked="" type="checkbox"/> NO		
Discussions with other Community Colleges	<input type="checkbox"/> YES (see below) <input checked="" type="checkbox"/> NO (see rationale below)		
Additional Resources (faculty, support services, equipment or supplies)	<input type="checkbox"/> YES (see below) <input checked="" type="checkbox"/> NO STAFFING IMPACT: Adjunct faculty will teach the courses. BUDGET IMPACT: Minor need for supplies, as the courses will generally be taught by brewers in brewing facilities.		
Primary Student Audience	Individuals in the state or region who are over the age of 21 who are looking to transition careers or return to college to train in a new area, and who are currently working and looking for a flexible online opportunity to learn the art and science of craft brewing.		
Anticipated three year unduplicated headcount	Year one: 15	Year two: 15	Year three: 20

<p align="center">Projected Demand in Wyoming and Nationally <i>(Labor market anticipated demand upon completion of the program and wages for this career field)</i></p>
--

Suggested data sources for Occupational Outlook and Wages:

Career One Stop- [US Department of Labor](https://www.dol.gov)

Bureau of Labor Statistics (occupational outlook handbook) <https://www.bls.gov/ooh/>

Wyoming Labor Market Information (WLMI) <http://doe.state.wy.us/lmi/>

1. Projected demand in Wyoming and Nation (copy and paste the table below)

United States	Employment		Percent Change	Job Openings
	Year _2020__	+10 years		
	559,545			
Wyoming	Employment		Percent Change	Job Openings
	Year 2020__	+10 years		
	1,337	1,943	1943	606

List data sources: Brewers Association; LCCC Survey

2. State and National Wages

Location	Pay Period	Year _2020__				
		10%	25%	Median	75%	90%
United States	Hourly					
	Yearly	31,000		38,371		53,000
Wyoming	Hourly					
	Yearly	34,290		87,130		103,300

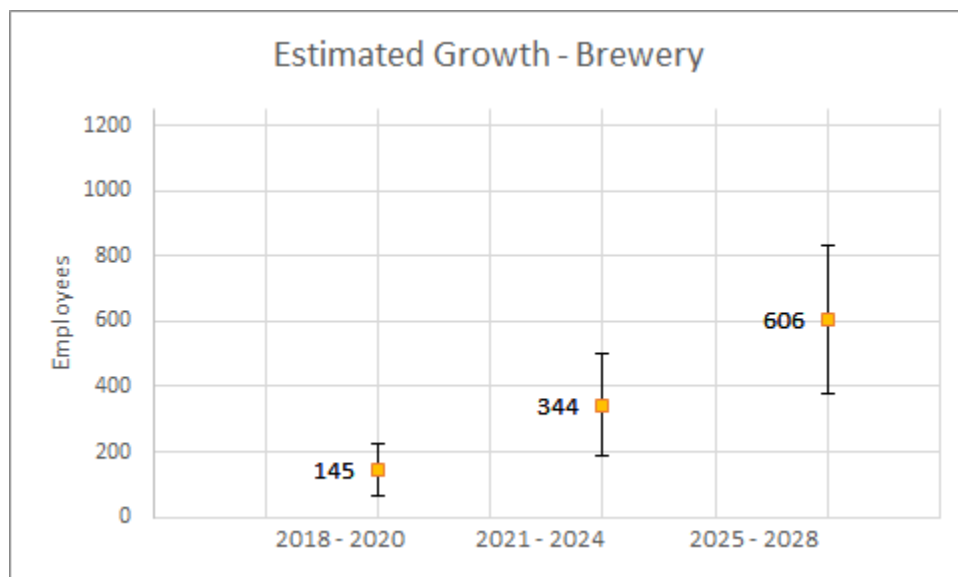
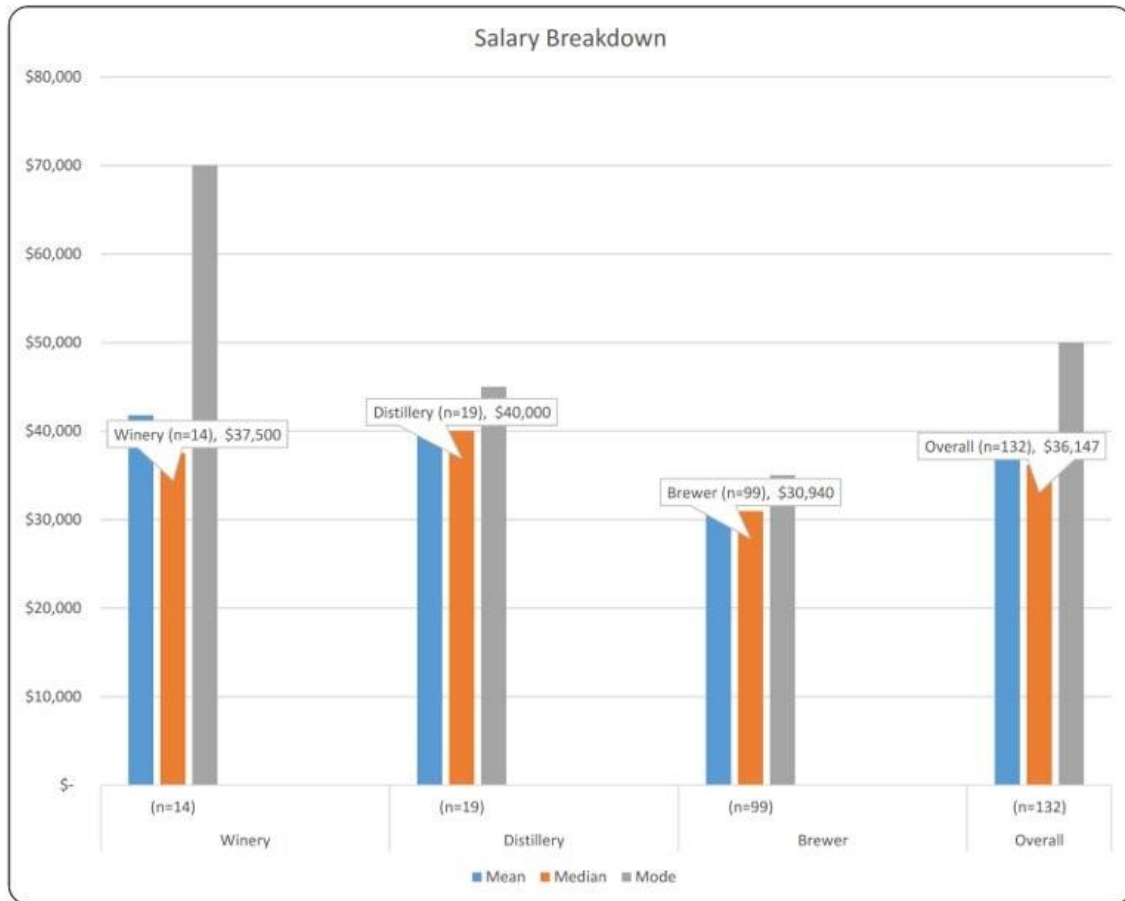
List data sources: Glassdoor; O*NET (51-9012.00)

APPENDIX A- PROGRAM TERM BY TERM PLAN

Attach a copy of the program's term by term plan below

PROPOSED PROGRAM OF STUDY Craft Brewing Credit Diploma

Course		LOI	Credits
Fall 2021			
BREW 1500	Safety and Sanitation for Fermentation	1	3
BREW 1510	Craft Beer Styles and Sensory Evaluation	1	3
BREW 1520	Beer Essentials: Grains	1	1
BREW 1530	Beer Essentials: Hops	1	1
BREW 1540	Beer Essentials: Water	1	1
BREW 1550	Beer Essentials: Microorganisms and Fermentation	1	1
BREW 1560	Beer Essentials: Adjuncts and Specialty Ingredients	1	1
BREW 1570	Recipe Development	1	1
Total credits:			12
Spring 2022			
BREW 1580	Brewing I: Raw Materials to Wort	2	4
BREW 1590	Brewing II: Wort to Finished Product	2	4
BREW 1600	Brewery Operations	2	4
			12
Summer 2022			
BREW 1970	Craft Brewing Internship	3	5
			5
	Total program credits		29



Program 5-Year Start-up and Operating Budget

Program name Craft Brewing Credit Diploma											
	Year 1		Year 2		Year 3		Year 4		Year 5		Total for 5 years
	FY22		FY23		FY24		FY25		FY26		
Estimated ENROLLMENT											
Enrollment - Headcount unduplicated	15		15		20		25		25		100
Credit Hours estimated earned per year	435		435		580		725		725		2900
FTE Enrollment*	18.13		18.13		24.17		30.21		30.21		121
Estimated Credit Diplomas Earned**	11.25		11.25		15		18.75		18.75		75
Estimated Incremental REVENUE											
Use of Current General Operating Funds											
State Funding for Student FTE	\$42,420.66		\$42,420.66		\$56,560.88		\$70,701.09		\$70,701.09		\$282,804
State Funding for Credentials Earned	\$14,391.90		\$14,391.90		\$19,189.20		\$23,986.50		\$23,986.50		\$95,946
Tuition Revenue											
Incremental Tuition/Fee Revenue	\$66,881.25		\$66,881.25		\$89,175.00		\$111,468.75		\$111,468.75		\$445,875
Program/Course Fees	\$3,375.00		\$3,375.00		\$4,500.00		\$5,625.00		\$5,625.00		\$22,500
External Funds (Perkins Grant)	-										
Other Funds (please specify)	-										
TOTAL	\$127,068.81		\$127,068.81		\$169,425.08		\$211,781.34		\$211,781.34		\$847,125
Estimated Incremental Revenue											
Personal Services	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	
Faculty (no full-time faculty costs)	0	-	0	-	0	-	0	-	0	-	
Adjunct/Staff	29	\$ 700.00	29	\$ 700.00	29	\$ 700.00	29	\$ 700.00	29	\$ 700.00	
Adjunct Cost for total program (1 yr)		\$ 20,300.00		\$ 20,300.00		\$ 20,300.00		\$ 20,300.00		\$ 20,300.00	\$101,500
Operating Expenses	\$2,000.00		\$2,000.00		\$2,000.00		\$2,000.00		\$2,000.00		\$10,000
Operating Expenses - Marketing	\$10,000.00		\$6,000.00		\$6,000.00		\$6,000.00		\$6,000.00		\$34,000
Equipment	0		0		0		0		0		
Start-up Expenditures	\$5,000.00		0		0		0		0		\$5,000
TOTAL	\$37,300		\$28,300		\$28,300		\$28,300		\$28,300		\$150,500
Estimated Incremental Expenditures											
Estimated Revenues	\$89,769		\$98,769		\$141,125		\$183,481		\$183,481		\$696,625
Over/(Under) Expenditures											

* FTE is tied to the number of students x credits taken. The program includes 29 credits.

** The estimated credentials was based on an estimated 75% completion rate.

State Funding: State Funding per student FTE is \$2,340.45 AND \$1,279.28 per credential. These numbers are used in lines 14 & 15 to determine the State Funding. (Provided by Jayne Myrick)

There may be a delay in the calculations of funding applying to the college State Funding, as the college FTEs and Credentials are recalculated every two years.

Tuition for 2021-2022 is \$105 per credit for instate students. Fees are \$48.75 per credit for in-state students.

There are indirect costs associated with all programs for normal college operations.



8/14/2020

The Wyoming Craft Brewers Guild exists to support and connect the Wyoming craft beer community through advocacy, education and promotion. The Guild is excited to welcome the new LCCC Craft Brewing program to the Wyoming higher-education landscape. A commitment to education is one of the primary values of the craft beer industry. Brewing science, brewery business and operational certification programs all over the country are allowing this remarkable industry to thrive and grow in communities of all sizes.

In 2019, Wyoming ranked 5th highest in the United States for breweries per capita. Wyoming breweries ranked 12th for economic impact per capita in the state, making craft beer one of the most important industries in the Cowboy State. As breweries continue to thrive and positively impact their communities and our economy, skilled and experienced workers become more and more critical. Through the LCCC Craft Brewing program, brewing enthusiasts will have the unique opportunity to develop skills necessary for a fulfilling professional career in the craft beer industry without ever leaving the state. It is our opinion that this program will benefit the larger economy in Wyoming at a time when a diversified economic landscape is needed. By providing a more skilled worker pool, the program will directly contribute to the elevation of an industry that has a significant economic impact, builds stronger communities, and creates sustainable jobs.

The Wyoming Craft Brewers Guild is committed to supporting the LCCC Craft Brewing program by providing insight, guidance, connections, and assistance with the internship component. We believe this program will have a tremendously positive impact on the health of our breweries and our state's economy.

Sincerely,

Michelle R. Forster

Executive Director

WYCBG Board of Directors:

Jody Valenta, President - Roadhouse Brewing, Jackson Hole
Luke Bauer, Vice President – Snake River Brewing, Jackson Hole
Tim Barnes, Member – Black Tooth Brewing, Sheridan
Victor Gabriel, Member – Accomplice Brewing, Cheyenne
Will Morrow, Member – Melvin Brewing, Alpine

Black Tooth Brewing Company
312 Broadway Street
Sheridan Wyoming 82801



October 4, 2019

Dr. Brady Hammond
Associate Vice President, Albany County Campus
Laramie County Community College
1125 Boulder Dr.
Laramie, WY 82070

Dear Dr. Hammond:

Re: Craft Brewing Program – Letter of support

On behalf of Black Tooth Brewing Co, please accept this letter of support for the Albany County Campus of Laramie County Community College in their application for the Associate of Applied Science in Craft Brewing.

I have been working with the Fermentation Science Advisory Committee at LCC since its inception in September of 2017. I have been an active member of the Master Brewers Association of the Americas, (MBAA) for over 20 years. The MBAA was formed in 1887 with the purpose of promoting, advancing, and improving the professional interest of brew and malt house production and technical personnel. I am also a member of the American Society of Brewing Chemists which was founded in 1934 to improve and bring uniformity to the brewing industry on a technical level. I have been working in the industry for over 23 years and have witnessed the widespread expansion of the Craft Brewing Industry. Approximately 10 years ago the MBAA recognized many community colleges and universities began to offer courses in brewing science and there was a concern regarding the curriculum being taught by these institutions and did it meet standards of the MBAA. The MBAA then created a Higher Education Advisory Committee that was tasked with providing guidance to and a "pathway to recognition" for academic institutions that offer or were developing certificate or degree programs in fermentation science. Being a part of the Fermentation Science Advisory Committee I feel confident that we are on the correct path to ensure that the learning outcomes being offered at LCC are appropriate for a two-year degree in fermentation science. I think that having qualified workers in the industry will help students become more marketable.

Black Tooth Brewing Company was founded in 2010 by Travis Zeilstra, (head brewer at the time) and Tim Barnes. Zeilstra is a graduate of the Western Culinary Institute and was recipient of the "brewer of the year" award at the Great American Beer Festival, (GABF) in 2007. This small beginning for Black Tooth quickly led way to future expansions, and in the spring of 2015 the completion of a multi-million-dollar production facility capable of producing upwards of 50,000 BBLS a year. Since then we have achieved several awards for our beers. In the 2019 US Open Beer

Championship competition we won a Bronze medal in the English Mild Ale category for our Saddle Bronc Brown Ale. We were also recognized as the best beer bar in Wyoming by craftbeer.com in 2018 and 2019.

If you require more information about Black Tooth Brewing Company, please contact me via email at ruth@btbrew.com.

Sincerely,

A handwritten signature in cursive script that reads "Ruth Martin".

Ruth Martin

Quality Assurance Director

Black Tooth Brewing Company

Bond's Brewing Company
411 South 2nd Street
Laramie, Wyoming 82070

September 16, 2019

Dr. Brady Hammond
Associate Vice President, Albany County Campus
Laramie County Community College
1125 Boulder Dr.
Laramie, WY 82070

Dear Dr. Hammond:

Re: Craft Brewing Program – Letter of support

On behalf of Bond's Brewing Company, please accept this letter of support for the Albany County Campus of Laramie County Community College in their application for the Associate of Applied Science in Craft Brewing.

Bond's Brewing Company is proud to offer support of the Craft Brewing Program at LCCC Albany County Campus. The Craft Brewing Program is a much needed and enticing program for young scholars interested in the art and science of the brewing process. We feel that in the state of Wyoming, this type of curriculum is imperative to the success of craft brewing. Brewing companies in the state will now have a pool of qualified employees to choose from because of this program; something the state is lacking. At Bond's, we will take part in collaborating with LCCC and offer as much real-time support of the brewing process, techniques, education, and support as needed. As the state of Wyoming is looking for new manufactures to bring revenue into the state, this program will not only help out on a local level but a state level as well.

Bond's Brewing is strictly a craft brewery specializing in unique and traditional ales. We have a 15bbl brewhouse with 6-15bbl fermenters and 1-30bbl fermenter, as well as, 6-15bbl bright tanks. We have a large space for capacity and a canning facility in the near future. We also have a full blown lab for all research and development purposes, as well as, quality control. Lastly, Bond's has a small 1/2bbl pilot system capable of all research and development projects moving forward.

If you require more information about Bond's Brewing Company, please contact us via Jay or Mallory Bond, jay@bondsbrewing.com and mallory@bondsbrewing.com or call us at 307-460-3385.

Sincerely,

Jay Bond & Mallory Bond

Owners – Bond's Brewing Company