

**New Program Proposal
 Associate in Applied Science in Brewmaster and Brewery Operations
 Horry-Georgetown Technical College**

Summary

Horry-Georgetown Technical College requests approval to offer a program leading to the Associate in Applied Science in Brewmaster and Brewery Operations, to be implemented in Fall 2015 through traditional instruction. The following chart provides the stages of review for the proposal. The Committee on Academic Affairs and Licensing (CAAL) voted to recommend approval of the proposal. The full program proposal is attached.

Stages of Consideration	Date	Comments
Program Proposal Received	1/9/15	Not Applicable
ACAP Consideration	2/12/15	ACAP members discussed the need for the proposed program.
Comments and suggestions from CHE staff sent to the institution	2/18/15	Staff requested the following revisions and explanations: <ul style="list-style-type: none"> ➤ Elaboration of student learning outcomes and methods of assessment ➤ Course information including titles and course codes ➤ The representative from HGTC noted the program will start probably in 2016 instead of Fall 2015 on the Grand Strand Campus where the College is building a new culinary institute.
Revised Program Proposal Received	2/24/15	The revised proposal satisfactorily addressed the requested revisions.
CAAL Consideration	4/8/15	CAAL comments and requests for clarification about the following topics: <ul style="list-style-type: none"> ➤ Use of iPads ➤ Composition of the Advisory Board ➤ Clarification of definition and number of breweries ➤ Request for data of comparative enrollment in neighboring states ➤ Considerable reallocation of existing funds for net total revenue ➤ Long-term economic impact Responses from Greenville Technical College and the South Carolina Technical College System: <ul style="list-style-type: none"> ➤ iPads are purchased by the department and held by faculty for extensive student use and application in the learning process. ➤ Each major in the Technical College System has a program-specific advisory board, including eight

Stages of Consideration	Date	Comments
		<p>(8) companies for this proposal.</p> <ul style="list-style-type: none"> ➤ There remains uncertainty even among industry professionals about the definitions of breweries, brewpubs, wholesalers, microbreweries, etc. ➤ Data in the proposal should be updated to include only 21 real breweries, 76 total breweries, wholesalers, distributors, and brew pubs, with 400-500 total employees now and 641 jobs created by 2019 projected. ➤ Accent Steel relocated to the Grand Strand, driving the market need for the proposal. ➤ Programs in North Carolina (Asheville, Rockingham, Auburn, and Appalachian) exist. Appalachian has requested a transfer agreement with the HGTC proposed program. ➤ Fund reallocation appears high because HGTC has funds in reserve and never has up-front funding. It is an authentic capital reserve. Funding is never siphoned from student services, for example, or other active operations. ➤ The proposed program will operate with a net gain by the end of the first three years. ➤ The anticipated high enrollment into the program of non-declared majors or students enrolled in general education or developmental courses can offset its high costs long-term.

Recommendation

The Committee on Academic Affairs and Licensing recommends that the Commission approve the program leading to the Associate of Applied Science in Brewmaster and Brewery Operations, to be implemented in Fall 2016.

Name of Institution

Horry-Georgetown Technical College

Name of Program (include concentrations, options, and tracks)

Associate in Applied Science, major in Brewmaster and Brewery Operations

Program Designation

- Associate's Degree Master's Degree
 Bachelor's Degree: 4 Year Specialist
 Bachelor's Degree: 5 Year Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA)
 Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.)

Does the program qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes
 No

Proposed Date of Implementation

CIP Code

Fall 2015

12.0599

Delivery Site(s)

Grand Strand Campus

Delivery Mode

- Traditional/face-to-face*
*select if less than 50% online
- Distance Education
 100% online
 Blended (more than 50% online)
 Other distance education

Program Contact Information (name, title, telephone number, and email address)

Joseph Bonaparte, Executive Director, Culinary Institute of Myrtle Beach, Culinary Arts, (843) 349-3657, Joseph.bonaparte@hgtc.edu,

Institutional Approvals and Dates of Approval

- HGTC Local Area Commission Approval – April 8, 2014
- State Board for Technical and Comprehensive Education Approval – January 20, 2015 (pending)

Background Information

State the nature and purpose of the proposed program, including target audience and centrality to institutional mission. (1500 characters)

Horry-Georgetown Technical College (HGTC) proposes to offer an Associate in Applied Science, major in Brewmaster and Brewery Operations. Currently, South Carolina hosts 76 brewers and beer wholesalers, compared with 165 in North Carolina, 106 in Georgia, and 228 in Florida. As the brewing industry in South Carolina matures and grows to keep pace with surrounding states, the demand for trained, knowledgeable employees will expand. Through the proposed program, HGTC is poised to satisfy the demand for a qualified workforce.

HGTC strives to provide quality, affordable educational programming for a positive economic impact in Horry and Georgetown counties, as well as the state of South Carolina. The proposed program will prepare competent and professional employees for entry- and middle-management level positions in keeping with the college mission. This program supports the college with responsiveness to business demand and specialized training in an industry related to culinary arts in which HGTC has an established and successful program.

The Grand Strand area has recognized the need for knowledgeable, trained personnel to support the growing craft brewing industry and consumer interest. As a result, HGTC is considered a partner in providing the education and training for this new and expanding job market. This is a fulfillment of the college's mission, "to provide accessible, affordable, high-quality, comprehensive two-year collegiate education and workforce development..."

List the program objectives. (2000 characters)

The purpose of the proposed Brewmaster & Brewery Operations Management program is to prepare graduates for employment in the expanding brewery, microbrewery and brewpub industries. Graduates will be prepared for employment opportunities in brewing, distillation and fermentation production, quality control labs, beer tending, beverage marketing and related industries. Jobs include brewmaster, assistant brewer, brewer technician, beer tender, brewing equipment operations, quality control, facilities operations and management, facilities inspection, marketing and distribution, and lab technician.

Assessment of Need

Provide an assessment of the need for the program for the institution, the state, the region, and beyond, if applicable. (1500 characters)

In 2012, the U.S. beer industry's total economic impact stood at more than \$246.5 billion, directly and indirectly employing more than 2 million Americans, paying \$78.9 billion in wages and benefits. Of the 2 million American employees, more than 1 million are directly employed by brewers, importers, distributors and retailers. Nationally, craft brewers currently provide an estimated 110,273 jobs in the U.S., including serving staff in brewpubs. Growth of the craft brewing industry in 2013 was 18% by volume and 20% by dollars compared to growth in 2012 of 15% by volume and 17% by dollars. Craft brewers sold an estimated 15.6 million barrels of beer in 2013, up from 13.2 million in 2012. The craft brewing sales share in 2013 was 7.8% by volume and 14.3% by dollars. Craft brewer retail dollar value in 2013 was an estimated \$14.3 billion.

As of March 17, 2014, the Brewers Association was aware of 413 brewery openings in 2013 (304 microbreweries and 109 brewpubs) and 44 brewery closings (20 microbreweries and 24 brewpubs). A total of 2,768 craft breweries operated for some or all of 2013, comprised of 1,237 brewpubs, 1,412 microbreweries and 119 regional craft breweries. A total of 2,822 breweries operated for some or all of 2013, the highest total since the 1870s.

In South Carolina the 2013 impact includes 19 breweries in SC with 60 brewery jobs with \$2,190,400 in wages; distributing provided 1,920 jobs and \$99,636,000 in wages; retail provided 13,750 jobs with \$284,044,200 in wages, with total brewing industry related jobs at 26,260. The industry paid total taxes of \$203,966,600, and total taxes generated by the brewing industry was \$334,981,900.

Employment Opportunities

Is specific employment/workforce data available to support the proposed program?

Yes

No

If yes, complete the table and the component that follows the table on page 4. If no, complete the single narrative response component on page 5 beginning with "Provide supporting evidence."

Employment Opportunities			
Occupation	Expected Number of Jobs	Employment Projection	Data Source
Brewmaster, QualityControl Lab Technician, Assistant Brewer, Brewer Technician, Beertender, Sales Representative, Bottling and Packaging Technician, Cellar Person	30 17 FT 13 PT	2015	College Needs Survey Data
Brewmaster, QualityControl Lab Technician, Assistant Brewer, Brewer Technician, Beertender, Sales Representative, Bottling and Packaging Technician, Cellar Person	76 37 FT 39 PT	2016	College Needs Survey Data
Brewmaster, QualityControl Lab Technician, Assistant Brewer, Brewer Technician, Beertender, Sales Representative, Bottling and Packaging Technician, Cellar Person	111 58 FT 53 PT	2017	College Needs Survey Data

Provide additional information regarding anticipated employment opportunities for graduates. (1000 characters)

Evidence of support from business and industry is demonstrated in the results of a needs assessment, conducted by HGTC. Eleven employers indicated a need for 217 openings over the next three years (i.e., 109 full-time positions and 108 part-time positions). Nine employers stated that they would encourage their employees to enroll in the proposed associate degree program and two would provide tuition assistance.

According to the U.S. Department of Labor, the 2012 median annual salary for jobs related to beer production was \$38,600 nationally and \$41,500 in South Carolina. Based on the employers surveyed, the average annual entry level salary for full-time employees is \$33,167 (\$15.95 per hour). For part-time entry level employees, the average salary is \$13.17 per hour.

Provide supporting evidence of anticipated employment opportunities for graduates, including a statement that clearly articulates what the program prepares graduates to do, any documented citations that suggests a correlation between this program and future employment, and other relevant information. Please cite specific resources, as appropriate. (3000 characters)

Note: Only complete this if the Employment Opportunities table and the section that follows the table on page 4 have not previously been completed.

N/A

Will the proposed program impact any existing degree programs and services at the institution (e.g., course offerings or enrollment)?

Yes

No

If yes, explain. (500 characters)

The proposed Brewmaster & Brewmaster Operations Management program is directly related to Culinary Arts and Science programs. Although the proposed program will be categorized as a hospitality program, it is distinctly different from the Culinary Arts and Science Program. The Culinary Arts and Science Program does, however, provide evidence of the potential success for the proposed program. The Culinary Arts program has proven stable with 149 students in Fall 2014, and is poised to double enrollment with the development of a new \$15 million culinary facility, updated curriculum, and active faculty recruitment.

Indirectly related programs at HGTC include General Business, Hospitality Management, and Sports Tourism.

List of Similar Programs in South Carolina

Program Name	Institution	Similarities	Differences
n/a – first program model of its kind in the state	--	--	--

Description of the Program

Projected Enrollment						
Year	Fall		Spring		Summer	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Credit Hours
2015-16	25	375	23	270	21	189
2016-17	41	615	39	270	21	189
2017-18	41	615	39	270	21	189

Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program?

Yes

No

If yes, explain. (1000 characters)

In compliance with State and Federal laws, students must be 21 years of age or older by the start of classes.

Are there any special articulation agreements for the proposed program?

Yes

No

If yes, identify. (1000 characters)

The proposed program is designed primarily as a terminal degree leading to employment upon graduation. HGTC has, however, begun preliminary discussions with Coastal Carolina University regarding articulation of coursework from the proposed associate degree into the School of Business at Coastal Carolina. An inquiry for discussion is planned with Appalachian State University and their new fermentation science program.

Curriculum

Select one of the following charts to complete: Curriculum by Year **or** Curriculum by Category

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
Year 1					
Fall		Spring		Summer	
BRW 101	3	BRW 105	3	BRW 200	6
BRW 102	3	BRW 106	3	PSY 103	3
BRW 103	3	BRW 107	3		
BRW 104	3	BRW 108	3		
MAT 155	3	ENG 155	3		
Total Semester Hours	15	Total Semester Hours	15	Total Semester Hours	9
Year 2					
Fall		Spring		Summer	
BRW 201	3	BRW 205	3		
BRW 202	3	CUL 171	3		
BRW 203	3	BRW 206	3		
BRW 204	3	BRW 207	3		
ENG 160	3	Humanities Course	3		
Total Semester Hours	15	Total Semester Hours	15	Total Semester Hours	

Total Credit Hours Required
69

Course Descriptions for New Courses

Course Name	Description
Introduction to Brewing	This course introduces an overview of brewing on an industrial scale. Students will learn technical brewing terminology for ingredients, equipment and processing. The science and technology underlying each step is clearly explained, as well as a focus on the practical considerations involved in the industrial production of beer.
Fermented Products	This course is an introduction to the selection and processing of the raw materials of beer production, grain handling and malt analysis. Students learn the professional standards and practices of producing beer by fermentation. Fermentation processes leading to different beer styles as well as maintaining consistency of product in a brewing environment are discussed.
Sanitation and Safety	This course covers sanitation, handling and safety with fermentation products, facilities and equipment. Emphasis is placed on the proper chemicals, their selection, handling and storage for sanitation control within the fermentation environment. Upon completion, students should be able to safely maintain quality and stability of fermentation products.
Beverage Operations Management	This course introduces the management of beverages served in hospitality operations. Topics include history, trends; service, procurement, storage; knowledge and control of fermented/distilled beverages; and non-alcoholic beverages, coffees, and teas. Students will be able to demonstrate an understanding of responsible alcohol service.
Fermentation Production	This course is the study of developing the fermentability and body in quality brews-and the process of preparing malted grain for fermentation and the variations on this process that create specific styles of beer. The science and technology of the process, as well as brew house standards involved in milling, mashing, lautering and boiling, are discussed.
Craft Beer Brewing	This course introduces craft beer brewing. Topics include recipe development, and equipment used in the production of small batch craft beer. Students will study-business practices of operating and growing a successful company including microbreweries, brewpubs, medium-sized and large brewing businesses.
Applied Craft Beer Microbiology	This course explores brewing microbiology and the impact of microorganisms on beer quality, the importance of brewery hygiene and biological management program. Students will examine the biology of yeast, including metabolism and growth, the differences between strains, and proper yeast management practices.
Beverage Sales and Marketing	This course will examine effective marketing programs and integrated marketing communications. Emphasis is placed on the craft beverage market including industry/consumer trends, economic, legal, and social considerations including branding, pricing, promotion and distribution.
SCWE Brewmaster-Brewery Operations	This course includes the application of skills within an approved work site related to Brewmaster and Brewery Operations Management.
Packaging, Materials, & Quality	In this course students will develop basic knowledge of bottling, canning and kegging beer, product stability and shelf life. Students will learn of colloidal stability, microbiological stability and oxygen pickup, packaging quality control tests related to process control as well as principles of labeling and packaging line design.

Equipment, Technology, & Maintenance	This course includes brewing equipment concepts and construction, as well as the engineering principles important in successful commercial brewing. Students will learn the vital engineering models and concepts key to operating a working brewery including fluid flow, steam, energy balances, heat transfer and refrigeration, and gas laws.
Advanced Brewing	This course covers advanced brewing processes. Topics include advanced beer making processes, analysis/monitoring of fermentation, specialty beer production, barrel aging, quality control, and sustainable practices. Students will learn to take artisan brewing to a distinctive level of complexity and refinement.
Sensory and Quality Evaluation	Effective sensory analysis is studied in raw material and the brewing process. Students will learn to control the ingredients and process to produce various outcomes and styles, such as lager, pale ale, IPA, saison, amber ale and stout. The course will examine the visual, olfactory and gustatory parameters used in the evaluation of beer.
Beverage Tourism and Tasting Management	Topics include basic tourism concepts applied to the brewing industry and the impact of beer tourism on local, regional, and national economies, including tax revenue and job creation. Students learn to identify and assess the tourism potential of various types of breweries, brewpubs, beer festivals, and craft beer education events.
Brewing and Facilities Management	This course includes the key aspects of brewing operations management including plant facilities management, equipment maintenance management, production control, skilled trade supervision, strategic manufacturing policy, systems analysis, productivity analysis and cost control, and materials planning.
Legal Issues Fermentation	This course introduces the laws and regulatory environment in the brewing and fermentation industry. Emphasis is placed both on social/ethical responsibilities and the state/federal regulations including licensing, taxation, labeling, record keeping, permits, inspections and laws regarding interstate and international commerce.

Faculty

Faculty and Administrative Personnel				
Rank	Full- or Part-time	Courses Taught or To be Taught, Including Term, Course Number & Title, Credit Hours	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Comments (i.e., explain role and/or changes in assignment)
Professor*	Full-Time	TBD	Bachelor's Degree	N/A

Professor*	Part-Time	TBD	Bachelor's Degree	N/A
Professor*	Part-Time	TBD	Bachelor's Degree	N/A

Note: Individuals should be listed with program supervisor positions listed first. Identify any new faculty with an asterisk next to their rank.

Total FTE needed to support the proposed program (i.e., the total FTE devoted just to the new program for all faculty, staff, and program administrators):

Faculty	1.5	Staff	.05	Administration	.05
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Faculty /Administrative Personnel Changes

Provide a brief explanation of any additional institutional changes in faculty and/or administrative assignment that may result from implementing the proposed program. (1000 characters)
N/A

Library and Learning Resources

Identify current library/learning collections, resources, and services necessary to support the proposed program and any additional library resources needed. (1000 characters)

Since there are no courses currently offered at the college that are directly related to brewing, limited items currently are available in the collection. HGTC has identified a three-year acquisitions plan for library resources to purchase books, e-books, and serial collection items (noted in the estimated costs chart). As faculty members are hired for the proposed program, they will be invited to purchase library instructional support resources to meet their own personal teaching style and student instructional needs.

A projected budget of approximately \$300.00 is anticipated for annual program operations after the third year.

Student Support Services

Identify academic support services needed for the proposed program and any additional estimated costs associated with these services. (500 characters)

Horry-Georgetown Technical College offers a wide array of academic support services, including the library, the Student Information Center (WaveNet Central) which provides computer resources and learning support, the Student Success and Tutoring Center (SSTC) which provides tutoring in numerous areas and includes Writing and Math Centers, and Academic Advising. All services are currently available with sufficient staffing to serve additional students and are supported by electronic resources including DegreeWorks, online library access, and online tutoring services.

Physical Resources

Identify any new instructional equipment needed for the proposed program. (500 characters)

The college will purchase general materials and supplies to support program operations including iPads, industry-related software, and printing supplies. The proposed Brewmaster & Brewery Operations Management program will require the acquisition of a variety of specialized equipment including eight (8) Storage Kegs, four (4) Fermentation Kegs, two (2) Chill Wizards, General Maintenance Kit, four (4) BrewMagic Covers, various, storage and cleaning equipment. First year students will still be trained on the BrewMagic systems. In the second year of the program, a three (3) to five (5) barrel system will be required for the second year curriculum and increased student body.

Will any extraordinary physical facilities be needed to support the proposed program?

Yes

No

Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements, including new facilities or modifications to existing facilities. (1000 characters)

The Brewmaster & Brewery Operations Management Program will be located on the Grand Strand Campus, based in Building 600, in proximity to the Culinary Arts Program. Limited remodeling will be required to accommodate specialized equipment for the Brewmaster and Brewery Operations Management Program. Approximately \$100,000 will be needed during the first year to modify existing space in order to accommodate the initial implementation of the BrewMagic units and to implement a subsequent phase requiring a larger system. General Education classes will continue to be offered in Building 200. Current computer and science labs will be available through scheduling.

Financial Support

Estimated New Costs by Year						
Category	1st	2nd	3rd	4th	5th	Total
Program Administration	\$14,907	\$14,907	\$14,907			\$44,721
Faculty and Staff Salaries	\$92,000	\$99,800	\$108,782			\$300,582
Graduate Assistants	\$0	\$0	\$0			0
Equipment	\$60,000	\$20,000	\$15,000			\$95,000
Facilities	\$100,000	\$20,000	\$7,500			\$127,500
Supplies and Materials	\$22,000	\$22,000	\$22,000			\$66,000
Library Resources	\$1,850	\$1,500	\$1,100			\$4,450
Other*	\$0	\$0	\$0			0
Total	\$290,757	\$178,207	\$169,289			\$638,253
Sources of Financing						
Category	1st	2nd	3rd	4th	5th	Total
Tuition Funding	\$120,312	\$191,736	\$191,736			\$503,784
Program-Specific Fees	\$0	\$0	\$0			
State Funding (i.e., Special State Appropriation)*	\$0	\$0	\$0			
Reallocation of Existing Funds*	\$170,445	\$0	\$0			\$170,445
Federal Funding*	\$0	\$0	\$0			
Other Funding*	\$0	\$0	\$0			
Total	\$290,757	\$191,736	\$191,736			\$674,229
Net Total (i.e., Estimated New Costs Minus Sources of Financing)	\$0	\$13,529	\$22,447			\$35,976

*Provide an explanation for these costs and sources of financing in the budget justification.

Budget Justification

Provide a brief explanation for the other new costs and any special sources of financing (state funding, reallocation of existing funds, federal funding, or other funding) identified in the Financial Support table. (1000 characters)

Note: Institutions need to complete this budget justification *only* if any other new costs, state funding, reallocation of existing funds, federal funding, or other funding are included in the Financial Support table.

For the first year, the college will reallocate plant funds, reserved for new programs as deemed appropriate, to cover anticipated operational costs.

Evaluation and Assessment

Programmatic Assessment: Provide an outline of how the proposed program will be evaluated, including any plans to track employment. Identify assessment tools or software used in the evaluation. Explain how assessment data will be used. (3000 characters)

As stated in the State Board for Technical and Comprehensive Education Procedure 3-1-301.1, the program will be evaluated annually on enrollment, number of graduates, and the percentage of graduates placed on related jobs or continuing their academic studies. The college will enter placement data into the state-level system based on findings from the National Clearinghouse, the SC Department of Employment and Workforce, and local-level strategies.

Additionally, the college will work with its local advisory board to conduct ongoing evaluation of program curriculum.

Student Learning Assessment

Expected Student Learning Outcomes	Methods of/Criteria for Assessment
Apply the knowledge and concepts of microbiology and biochemistry in the fermentation process of brewing of beer.	Students will successfully apply fermentation knowledge to grain handling, malting, malt analysis, yeast and fermentation processes, raw materials, beer production, quality control, packaging processes, flavor production, and control as demonstrated in appropriate lab analysis as required in brewery as shown in skill tests.
Identify classic and craft-brew beer styles, describing the brewing techniques of each and the impact of various styles on marketing and tourism.	Students will successfully demonstrate specialty beer production, and create market models for local, regional and national brewing sectors to include small businesses, brewing events and corporations.
Discuss and apply business principles and strategies related to brewery operations, including human resource management, sales and government legislation.	Students will perform tasks and develop plans related to common business practices in the brewing industry, including inventory, menu planning, cost control, purchasing and human resources, to include creating a business plan for a brewery related business.
Analyze and evaluate business concepts of the brewing industry and the day-to-day activities involved with the operation of a solvent brewing facility.	Students will be able to demonstrate an understanding of the operations of a brewery through their successful completion of their Supervised Cooperative Work Experience with local and regional brewing operations.
Evaluate consistency and quality of beer, and determine beer style and characteristics.	Students will successfully complete skills test demonstrating consistency and quality of beer through appropriate lab analysis as required by industry standards.

Will the proposed program seek program-specific accreditation?

Yes

No

If yes, provide the institution's plans to seek accreditation, including the expected timeline for accreditation. (500 characters)

Will the proposed program lead to licensure or certification?

Yes

No

If yes, explain how the program will prepare students for licensure or certification. (500 characters)

Teacher or School Professional Preparation Programs

Is the proposed program a teacher or school professional preparation program?

Yes

No

If yes, complete the following components.

Area of Certification

Please attach a document addressing the South Carolina Department of Education Requirements and SPA or Other National Specialized and/or Professional Association Standards.