



## NORTH CAROLINA COMMUNITY COLLEGE SYSTEM

*Dr. R. Scott Ralls, President*

July 23, 2013

### MEMORANDUM

TO: Presidents  
Chief Academic Officers

FROM: Wesley E. Beddard, Associate Vice President  
Student Learning and Success

SUBJECT: State Board Action on July 19, 2013  
New and Revised Curriculum Standards, New Courses and  
Revised *Career and College Promise Operating Procedures*

On July 19, 2013, the State Board of Community Colleges approved the requested revisions to the following curriculum standards:

**Central Sterile Processing (Certificate) (C45180)**  
**Medical Dosimetry (Diploma) (D45450)**

Please be aware that you must implement the revised standards no later than one year after the effective term. You must update your college's electronic programs of study and receive approval from the System Office prior to implementation of the revised programs.

In addition, the State Board of Community Colleges approved curriculum courses and a curriculum standard for the following new curriculum program:

**Brewing, Distillation, and Fermentation (A15250)**

*A Tier I funding classification for the new Brewing, Distillation, and Fermentation (BDF) curriculum prefix has been approved.*

The State Board also approved the following addition to the **Career and College Promise (CCP) Operating Procedures** and updated the procedures to reflect PSAT Benchmark revisions:

*A student may concurrently enroll in two CTE programs of study provided the exception has been approved by the college's Chief Academic Officer or his/her designee.*

If you have any questions concerning the State Board action items, please contact Ms. Jennifer Frazelle at 919.807.7120 or [frazellej@ncccommunitycolleges.edu](mailto:frazellej@ncccommunitycolleges.edu). An outline of the specific curriculum standard revisions, revised standards, new courses, new curriculum standard and the revised CCP Operating Procedures are attached for your convenience. You may view all curriculum standards and courses by visiting the Programs website at:

<http://www.ncccommunitycolleges.edu/Programs/index.html>

WB/JF/gr

Attachments

c: Dr. Sharon E. Morrissey      Ms. Jennifer Frazelle      CC13-014  
Ms. Elizabeth Self      Program Coordinators      Email

---

MAILING ADDRESS: 5016 MAIL SERVICE CENTER ~ RALEIGH, NC 27699-5016

Street Address: 200 West Jones ~ Raleigh, NC 27603 ~ 919-807-7100 ~ Fax 919-807-7173

AN EQUAL OPPORTUNITY EMPLOYER

## Curriculum Standard for Brewing, Distillation and Fermentation

**Career Cluster:** Agriculture, Food & Natural Resources\*\*

**Cluster Description:** The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources..

**Pathway:** Food Products and Processing Systems

**Effective Term:** Fall 2013 (2013\*03)

### Program Majors Under Pathway

Program Major / Classification of Instruction Programs (CIP) Code	CIP Code	Credential Level(s) Offered	Program Major Code
Brewing, Distillation and Fermentation	CIP Code 01.0401	AAS/Diploma/Certificate	A15250

**Pathway Description:**

This curriculum is designed to prepare individuals for various careers in the brewing, distillation and fermentation industry. Classroom instruction, practical laboratory applications of brewing, distillation and fermentation principles and practices are included in the program of study.

Course work in brewing, distillation and fermentation includes production, operations, safety and sanitation, and associated process technologies. Related course work is offered in fermentation production, safety and sanitation, applied craft beverage microbiology, agriculture, marketing, management, equipment, packaging, and maintenance.

Graduates should qualify for employment opportunities in the brewing, distillation and fermentation industry. Students may be eligible to sit for the professional Institute of Brewing and Distilling (IBD) certification exams which correspond to the program of study.

*Program Major Description: Choose one of the following 4<sup>th</sup> paragraphs to use in conjunction with the first three paragraphs of the pathway description above for documentation used to identify each **Program Major**:*

**Brewing, Distillation and Fermentation:** A program that prepares individuals to apply technical knowledge and skills to brew, distill and ferment various products, including beverages. Includes instruction in production of fermented products, cultivating, marketing, management, legal issues, inspection, maintenance, service and repair of equipment, facility operations, packaging, sanitation, and welding.

\*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Approved by the State Board of Community Colleges on July 19, 2013.

**I. General Education Academic Core**

[Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 23 SBCC 02E.0204(3)]: Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

### Plant Systems: Brewing, Distillation and Fermentation

Recommended General Education Academic Core	AAS	Diploma	Certificate
---	-----	---------	-------------

<b>Minimum General Education Hours Required:</b>	<b>15 SHC</b>	<b>6 SHC</b>	<b>0 SHC</b>
--	---------------	--------------	--------------

Courses listed below are recommended general education courses for this curriculum standard. Colleges may choose to include additional or alternative general education courses to meet local curriculum needs.

\*Recommended certificate and diploma level curriculum courses. These courses may not be included in associate degree programs.

**Communication:**

*COM 101	Workplace Communication	3 SHC
COM 120	Intro Interpersonal Com	3 SHC
COM 231	Public Speaking	3 SHC
*ENG 101	Applied Communications I	3 SHC
*ENG 102	Applied Communications II	3 SHC
ENG 110	Freshman Composition	3 SHC
ENG 111	Expository Writing	3 SHC
ENG 112	Argument-Based Research	3 SHC
ENG 114	Prof Research & Reporting	3 SHC
ENG 115	Oral Communication	3 SHC
ENG 116	Technical Report Writing	3 SHC

**6 SHC****3-6 SHC****Optional****Humanities/Fine Arts:**

*HUM 101	Values in the Workplace	2 SHC
HUM 110	Technology and Society	3 SHC
HUM 115	Critical Thinking	3 SHC
HUM 230	Leadership Development	3 SHC
PHI 230	Introduction to Logic	3 SHC
PHI 240	Introduction to Ethics	3 SHC

**3 SHC****0-3 SHC****Optional****Social /Behavioral Sciences:**

ECO 151	Survey of Economics	3 SHC
ECO 251	Prin of Microeconomics	3 SHC
GEO 110	Introduction to Geography	3 SHC
GEO 111	World Regional Geography	3 SHC
*PSY 101	Applied Psychology	3 SHC
*PSY 102	Human Relations	2 SHC
PSY 118	Interpersonal Psychology	3 SHC
PSY 135	Group Processes	3 SHC
PSY 150	General Psychology	3 SHC
*SOC 105	Social Relationships	3 SHC
SOC 210	Introduction to Sociology	3 SHC
SOC 215	Group Processes	3 SHC

**3 SHC****0-3 SHC****Optional****Natural Sciences/Mathematics:**

BIO 111	General Biology I	4 SHC
BIO 140	Environmental Biology	3 SHC
BIO 160	Introductory Life Science	3 SHC
BIO 175	General Microbiology	3 SHC
CHM 130	Gen, Org, & Biochemistry	3 SHC
CHM 131	Introduction to Chemistry	3 SHC
CHM 132	Organic and Biochemistry	4 SHC
CHM 151	General Chemistry I	4 SHC
CHM 152	General Chemistry II	4 SHC
*MAT 101	Applied Mathematics I	3 SHC

**3 SHC****0-3 SHC****Optional**

MAT 110	Mathematical Measurement	3 SHC			
MAT 115	Mathematical Models	3 SHC			
MAT 120	Geometry and Trigonometry	3 SHC			
MAT 121	Algebra and Trigonometry I	3 SHC			
MAT 140	Survey of Mathematics	3 SHC			
MAT 151	Statistics I	3 SHC			
MAT 155	Statistical Analysis	3 SHC			
MAT 161	College Algebra	3 SHC			
MAT 171	Precalculus Algebra	3 SHC			
PHY 110	Conceptual Physics	3 SHC			

**II. Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. Below is a description of each section under Major Hours.

- A. Technical Core.** The technical core is comprised of specific courses which are required for all Program Majors under this Curriculum Standard. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the curriculum core courses or core subject area of the AAS program.
- B. Program Major(s).** The Program Major must include a minimum of 12 semester hours credit from required subjects and/or courses. The Program Major is in addition to the technical core.
- C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from each prefix listed, with the exception of prefixes listed in the core.

<b>Plant Systems: Brewing, Distillation and Fermentation</b>	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
<b>Minimum Major Hours Required:</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>
<p><b>A. Technical Core:</b>  <i>Courses required for the diploma are designated with an asterisk (*).</i></p> <p>*BDF 110 Fermentation Production 4 SHC            *BDF 111 BDF Safety and Sanitation 4 SHC            *BDF 115 Applied Craft Bev Microbiology 4 SHC</p> <p><b>*Agriculture/Sustainability (Choose one)</b>            AGR 139 Intro to Sustainable Ag 3 SHC            AGR 160 Plant Science 3 SHC            HOR 245 Hor Specialty Crops 3 SHC            SST 110 Intro to Sustainability 3 SHC</p> <p><b>*Business/Entrepreneurship (Choose one)</b>            BDF 261 Bev Marketing &amp; Sales 3 SHC            BUS 110 Introduction to Business 3 SHC            BUS 137 Principles of Management 3 SHC            ETR 210 Intro to Entrepreneurship 3 SHC</p> <p><b>*Facility Operations (Choose one)</b>            HRM 135 Facilities Management 3 SHC            ISC 112 Industrial Safety 2 SHC            MNT 110 Intro to Maint Procedures 2 SHC            MNT 165 Mechanical Industrial Systems 2 SHC</p>	<b>29-36</b>	<b>20-21</b>	

**Required Subject Areas: Select one pathway**

***Specialty Agriculture for Fermentation***

BDF 210	Hops Selection and Production	4 SHC
HOR 162	Applied Plant Science	3 SHC
HOR 166	Soils & Fertilizers	3 SHC

***Brewing Production, Marketing and Management***

BDF 215	Legal Issues-Fermentation	3 SHC
HRM 220	Cost Control-Food & Bev	3 SHC
HRM 225	Beverage Management	3 SHC

***Brewing Equipment, Packaging and Maintenance***

ATR 112	Intro to Automation	3 SHC
	Or	
ELC 128	Intro to PLC	3 SHC
	Or	
ELN 260	Prog Logic Controllers	4 SHC
BDF 236	Brewing/Packaging Maintenance	4 SHC
HYD 110	Hydraulics/Pneumatics I	3 SHC
WLD 214	Sanitary Welding	4 SHC

**B. Program Major: Not Applicable**

**C. Other Major Hours.**

*To be selected from the following prefixes:*

ACC, AGR, AHR, ALT, ATR, BDF, BIO, BPA, BPM, BTC, BUS, CHM, CIS, COE, CTS, CUL, CSV, DBA, ECO, EGR, ELC, ELN, ENV, ETR, FPR, FST, HOR, HRM, HYD, ISC, LBT, LOG, MAC, MEC, MKT, MNT, OMT, PCI, PKG, PLU, REF, SST, TAT, VEN, WEB, WLD

*Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.*

### III. Other Required Hours

*A college may include courses to meet graduation or local employer requirements in a certificate (0-1 SHC), diploma (0-4 SHC), or an associate in applied science (0-7 SHC) program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.*

### IV. Employability Competencies

Fundamental competencies that address soft skills vital to employability, personal, and professional success are listed below. Colleges are encouraged to integrate these competencies into the curriculum by embedding appropriate student learning outcomes into one or more courses or through alternative methods.

- A. Interpersonal Skills and Teamwork** – The ability to work effectively with others, especially to analyze situations, establish priorities, and apply resources for solving problems or accomplishing tasks.
- B. Communication** – The ability to effectively exchange ideas and information with others through oral, written, or visual means.
- C. Integrity and Professionalism** – Workplace behaviors that relate to ethical standards, honesty, fairness, respect, responsibility, self-control, criticism and demeanor.
- D. Problem-solving** – The ability to identify problems and potential causes while developing and implementing practical action plans for solutions.
- E. Initiative and Dependability** – Workplace behaviors that relate to seeking out new responsibilities, establishing and meeting goals, completing tasks, following directions, complying with rules, and consistent reliability.
- F. Information processing** – The ability to acquire, evaluate, organize, manage, and interpret information.
- G. Adaptability and Lifelong Learning** – The ability to learn and apply new knowledge and skills and adapt to changing technologies, methods, processes, work environments, organizational structures and management practices.
- H. Entrepreneurship** – The knowledge and skills necessary to create opportunities and develop as an employee or self-employed business owner.

*\*\*The North Carolina Career Clusters Guide was developed by the North Carolina Department of Public Instruction and the North Carolina Community College system to link the academic and Career and Technical Education programs at the secondary and postsecondary levels to increase student achievement. Additional information about Career Clusters is located at: [http://www.nc-net.info/NC\\_career\\_clusters\\_guide.php](http://www.nc-net.info/NC_career_clusters_guide.php) or <http://www.careertech.org>.*

*Summary of Required Semester Hour Credits (SHC) for each credential:*

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
<b>Total Semester Hours Credit (SHC)</b>	<b>64-76</b>	<b>36-48</b>	<b>12-18</b>

# CURRICULUM STANDARD

*Effective Term  
Fall 2013  
2013\*03*

Curriculum Program Title	<b>Central Sterile Processing (Certificate)</b>	Code	<b>C45180</b>
Concentration	<b>(not applicable)</b>		

## *Curriculum Description*

The Central Sterile Processing curriculum is designed to prepare individuals for the field of Sterile Processing and Central Service Supply.

Students will develop skills necessary to properly disinfect, prepare process, store, and issue both sterile and nonsterile supplies and equipment for patient care. Also, students will learn to operate sterilizing units and monitor effectiveness of the sterilization process.

Graduates will receive a certificate and may be eligible to apply to take the National Institute for Certification of Healthcare Sterile Processing and Distribution Personnel Examination (CBSPD). Employment opportunities include surgery centers, dialysis facilities, and central processing units in hospitals.

## *Curriculum Requirements\**

*[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]*

- I. General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.
  
- II. Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*
  
- III. Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
<b>Total Semester Hours Credit (SHC)</b>	<b>64-76</b>	<b>36-48</b>	<b>12-18</b>

---

\*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.





# CURRICULUM STANDARD

Effective Term  
Fall 2013  
2013\*03

Curriculum Program Title	<b>Medical Dosimetry (Diploma)</b>	Code	<b>D45450</b>
Concentration	<b>(not applicable)</b>		

## *Curriculum Description*

The curriculum is designed to prepare ARRT certified radiation therapists to work in the care of cancer patients as medical dosimetrist. The curriculum provides instruction to enable the participant to become a member of the radiation oncology team.

The curriculum content includes specific coursework to provide classroom and direct clinical experience to train the student in the fundamentals of medical dosimetry practice using current technology, tools and techniques. Students will participate in studies related to the role of the medical dosimetrist and professional ethics, radiation oncology anatomy, treatment planning, dose calculations, clinical oncology, brachytherapy, dosimetry physics, radiation protection, quality assurance and computer applications.

Graduates of the program will be able to obtain employment as a medical dosimetrist and apply to the Medical Dosimetrist Certification Board (MDCB) to sit for a national certification.

*Admission criteria include the completion of a bachelors degree.*

## *Curriculum Requirements\**

*[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]*

- I. General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.
- II. Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*
- III. Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
<b>Total Semester Hours Credit (SHC)</b>	<b>64-76</b>	<b>36-48</b>	<b>12-18</b>

*\*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.*

## *Major Hours*

*[ref. 23 NCAC 02E.0204 (3)]*

- A. Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.
- B. Concentration** *(if applicable)*. A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.
- C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

### **Medical Dosimetry (Diploma) (D45450)**

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
<b>Minimum Major Hours Required</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>
<b>A. CORE</b>		<b>38 SHC</b>	
<b>Required Courses:</b>			
DOS 210 Introduction to Dosimetry	2 SHC		
DOS 220 Treatment Planning I	2 SHC		
DOS 221 Treatment Planning II	2 SHC		
DOS 230 Clinical Research Exper	2 SHC		
DOS 240 Clinical Education I	8 SHC		
DOS 241 Clinical Education II	8 SHC		
DOS 242 Clinical Education III	5 SHC		
DOS 243 Dosimetry Physics	2 SHC		
DOS 250 Dose Calculations	2 SHC		
DOS 260 Brachytherapy Planning	3 SHC		
DOS 270 Medical Dosimetry Capstone	2 SHC		
<b>B. CONCENTRATION</b> <i>(Not applicable)</i>			
<b>C. OTHER MAJOR HOURS</b>			
<i>To be selected from the following prefixes:</i>			
CIS, COE, CSC, CTS, DOS, RAD, and RTT			
<i>Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.</i>			

## **BREWING, DISTILLATION AND FERMENTATION**

### **BDF 110 Fermentation Production**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course introduces the basic methodologies used in fermentation. Emphasis is placed on the production of fermented products including ingredients, techniques, fermentation management, storage and sanitation. Upon completion, students should be able to design/produce pilot-scale products to demonstrate how material selection and process conditions can generate different kinds/qualities of products.

#### **Student Learning Outcomes**

1. Identify and develop proper workplace and personal safety and well-being prevention measures including; MSDS, HACCP and CIP plans.
2. Explain the operation and correct procedures required to produce proper fermented products.
3. Demonstrate proper fermented product production using basic ingredients and recipes.
4. Explain the operation and correct procedures required to maintain a variety of peripheral production equipment.
5. Identify the proper control system for purchase, handling and storage of raw materials used in production.

### **BDF 111 BDF Safety & Sanitation**

Class: 3      Lab: 2      Credit: 4

Prerequisites:    None

Corequisites:    None

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.

#### **Student Learning Outcomes**

1. Demonstrate work place safety and hazardous waste disposal per OSHA and EPA guidelines that apply to relevant fermentation work.
2. Identify and communicate safety regulations as it applies to the fermentation environment.
3. Select proper chemical agents to clean fermentation equipment and its environment based on concentration levels, time and temperature.
4. Demonstrate appropriate storage and handling techniques of fermented products.
5. Distinguish between different fermentation sanitation cleaning techniques.

## **BDF 112 Survey of Fermented Products**

Class: 3      Lab: 3      Credit: 4

Prerequisites:    None

Corequisites:    None

This course provides an introduction to fermented products. Emphasis is placed on history, production, characteristics, taxonomy, and evaluation. Upon completion, students should be able to identify and apply factors relevant to the production of fermented products.

### **Student Learning Outcomes**

1. Describe the distinguishing characteristics of beer, wine, distilled spirits, and fermented foods and beverages.
2. Identify the major grape varietals and growing regions of the world associated with wine.
3. Explain beer, wine, spirit and other fermented beverage production process from the original product to the finished beverage.
4. Explain the production process of fermented foods.
5. Describe the major beer styles (ales/lagers) recognized by Beer Judges Certification Program and the regions of the world to which they are associated.
6. Describe the major spirit styles and regions of the world to which they are associated.

## **BDF 113 Careers in Fermentation**

Class: 1      Lab: 0      Credit: 1

Prerequisites:    None

Corequisites:    None

This course introduces career opportunities available and preferred management practices in the brewing, distillation and fermentation industry. Topics include career choices, self-assessment, and development of career pathways supporting occupational interests, and creating/utilizing the portfolio as a credential. Upon completion, students should be able to manage their learning experience to meet their personal direction of career specialization.

### **Student Learning Outcomes**

1. Identify different career pathways within the fermentation industry.
2. Evaluate self-assessment tools to benefit probable student career strengths.
3. Create and utilize a portfolio as a credential.

## **BDF 114 Craft Beer Brewing**

Class: 1      Lab: 3      Credit: 2

Prerequisites:    None

Corequisites:    None

This course introduces entry level skills in craft beer brewing. Topics include recipe development, basic sanitation, techniques and equipment used in the production of small batches (5 gallons or less) of craft beer. Upon completion, students should be able to demonstrate how to produce small batches of craft beer and be able to extrapolate concepts to larger future production.

### **Student Learning Outcomes**

1. Identify materials (grains, hops, yeast, water) used in small batch brewing.
2. Develop recipe for small batch brewing and show ability to convert to larger system.
3. Demonstrate proper sanitation for small batch brewing.
4. Use proper brewing techniques on small batch brewing systems to produce craft beer.

## **BDF 115 Applied Craft Bev Microbiology**

Class: 3      Lab: 2      Credit: 4

Prerequisites:    None

Corequisites:    None

This course provides an introduction to microbiology and laboratory practices in the brewing industry. Emphasis is placed on yeast biology, fermentation, and microorganisms in brewery/distillation and sanitation. Upon completion, students should be able to demonstrate an understanding of microbiology, laboratory techniques, and commonly used analysis methodologies applied in the brewing industry.

### **Student Learning Outcomes**

1. Identify strains of yeast used in the production of ales and lagers.
2. Identify the biology of yeast, cell structure, and physiology.
3. Describe the process of yeast propagation, vitality and role in health.
4. Choose and maintain yeast based on analytical, microbiological, and sensory data.
5. Identify microorganisms in brewing and their impact on the process.
6. Identify infection sources and systems for infection elimination.

## **BDF 125 Bev Tech & Calculations**

Class: 1      Lab: 3      Credit: 2

Prerequisites:    None

Corequisites:    None

This course introduces technology and mathematical calculations used in craft beverage production. Emphasis is placed on equipment and technology relating to scheduling/record keeping, and recipe development/alcohol control and ingredient usage calculations. Upon completion, students should be able to identify/demonstrate technology and equipment used in craft beverage production and recipe development.

### **Student Learning Outcomes**

1. Determine standard brewing calculations and adjust existing operations and materials to meet finished product.
2. Calculate and convert common internationally used brewing measurement systems.
3. Create brewing recipes to optimize finished product quality.
4. Explain the basic design, operation of hardware/software technology related to the fermented beverage industry.

## **BDF 160 Food & Beverage Pairing**

Class: 2      Lab: 2      Credit: 3

Prerequisites:    None

Corequisites:    None

This course introduces theoretical and practical aspects of the art and science of food and craft beverage pairings. Emphasis is placed on consumer perception/acceptance of food/craft beverage pairings through sensory evaluation. Upon completion, students should be able to pair food qualities with beverages and utilize appropriate service and presentation techniques.

### **Student Learning Outcomes**

1. Characterize the direct relationship between the food and beverage service provider and the guest.
2. Demonstrate proper food and beverage service of a multi-course meal using correct procedures for American Plate Service.
3. Identify traditional food/beverage pairings and the relationship to the original culture/country.
4. Analyze in sensory evaluation the relationship of flavor to food and beverage individually and combined.
5. Design food/drink choice recommendations to typical and specialty menu selections.

## **BDF 170 Bev Tour & Tasting Mgmt**

Class: 2      Lab: 2      Credit: 3

Prerequisites:    None

Corequisites:    None

This course covers the role of craft beverage as a destination attraction. Emphasis is placed on developing, marketing and managing the craft beverage experience including customer service, special events, and tasting room operations. Upon completion, students should be able to demonstrate tasting room management for craft beverages and its applications to tourism and economic development.

### **Student Learning Outcomes**

1. Explain the equipment and product and staffing requirements that contribute to creation of a quality tasting room,
2. Design a tasting room appropriate for guest that promotes sales and conveys an appropriate theme to producer.
3. Analyze beverage tourism marketing strategies and trends to develop a marketing plan.
4. Explain quality service management best practices and relationship to retail revenue development.
5. Create special event production plans to promote, brand, and build relationships as a destination attraction.

## **BDF 175 Distillation Operations**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course covers the principles and production techniques involved in the distillation of grains, fruits, and other carbohydrates associated with craft beverage distillation. Emphasis is placed on materials/processing, fermentation applications, distillation technology, sensory evaluation, quality control, engineering, and craft distillery management. Upon completion, students should be able to demonstrate an understanding of distillation operation/management and the impact of sanitation, fermentation, maturation and aging in the production of distillations.

### **Student Learning Outcomes**

1. Explain health and safety operations including chemicals, high temperature product, and equipment to ensure a safe workplace environment.
2. Produce distilled beverages from grains and fruits using industry standard equipment.
3. Operate and properly control all related production equipment and raw materials in a safe and sanitary manor.
4. Introduce specialty production opportunities in distillation that optimizes product styles.
5. Analyze quality control standards and specific management issues to the production of distilled products.

## **BDF 180 Sensory Evaluation**

Class: 2      Lab: 3      Credit: 3

Prerequisites:    None

Corequisites:    None

This course introduces the visual, olfactory, and gustatory parameters used in the evaluation of beer and distillery products. Emphasis is placed on aromas, finish, flavor/taste interactions, and factors affecting product quality, as well as descriptive analysis/model systems, judging systems, set-up, and operation for beverage competitions. Upon completion, students should be able to demonstrate the fundamental principles/practices in sensory analysis and identify elements that influence sensory qualities of particular craft beverages.

### **Student Learning Outcomes**

1. Explain specific aspects and characters that should be evaluated within a sensory evaluation of fermented beverages.
2. Design an ideal tasting environment and minimize internal and external factors that can cause negative effect.
3. Interpret the presence of distinct ingredients and production techniques on the finished product, through sensory evaluation.
4. Discuss the qualities and classification of fermented beverages using defined evaluation terminology and techniques.
5. Judge off-flavors of beverages by use of sensory evaluation techniques and applied use of common off-flavors found in finished products.
6. Analyze qualitative and quantitative sensory data results from different measurement scales used to collect data.
7. Design a competitive judging evaluation including set-up, panel selection, and operation.

## **BDF 210 Hops Selection and Production**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course covers the selection and cultivation of hops for the production of fermented products. Emphasis is placed on varietal selection for the local region, yard establishment, harvest, post-harvest handling, production, drying, and pelletizing. Upon completion, students should be able to select the correct varieties, cultivate, harvest, and process hops for fermented products.

### **Student Learning Outcomes**

1. Identify proper hops varieties for the local region.
2. Demonstrate proper harvesting and handling of hops.
3. Successfully dry and pelletize hops for storage and use in fermented products.
4. Demonstrate proper cultivation on hop trellis system.
5. Demonstrate proper harvest procedures for cultivated hops.



## **BDF 213 Malting**

Class: 2      Lab: 4      Credit: 4

Prerequisites: None

Corequisites: None

This course covers processes and technologies used in malting grains for fermented products. Emphasis is placed on grain selection for different product styles, science of malting grain, and analysis of malted products as they pertain to fermented products. Upon completion, students should be able to select proper grain and complete the malting process according to Institute of Brewing and Distilling (IBD) malting standards.

### **Student Learning Outcomes**

1. Explain different steeps and kiln designs according to IBD standards.
2. Explain the science involved in malting process.
3. Explain water uptake by grains and other objectives of steeping.
4. Identify changes that occur during germination and recognize changes that occur during kilning and roasting.
5. Analyze grain for malting.
6. Identify different grain types by varieties.
7. Identify the microbes, diseases, and pests that affect grain according to IBD standards.

## **BDF 215 Legal Issues-Fermentation**

Class: 3      Lab: 0      Credit: 3

Prerequisites: None

Corequisites: None

This course covers the laws and regulatory environment particular to the brewing, distillation and fermentation industry. Emphasis is placed on social/ethical responsibilities and the state/federal regulations including licensing, taxation, labeling, record keeping, permits, inspections and laws regarding interstate and international commerce. Upon completion, students should be able to demonstrate an understanding of the laws and regulations that influence the brewing, distillation and fermentation industry.

### **Student Learning Outcomes**

1. Analyze the social/ethical responsibilities of the fermented beverage industry including safe alcohol service, dram shop laws and alcohols relationship to society.
2. Examine the state/federal compliance regulations relating to distribution, sales, marketing and taxation.
3. Examine the state/federal compliance regulations relating to licensing, permits and inspections.
4. Discuss the importance and impact of trade organizations from the state, national and international level.
5. Explain the different legal requirements levied on the separate segments of the fermented beverage industry.

## **BDF 220 Applied Craft Bev Chemistry**

Class: 3      Lab: 2      Credit: 4

Prerequisites:    None

Corequisites:    None

This course introduces chemistry fundamentals as they apply to the brewing and distillation industry. Emphasis is placed on elements impacting brewing/distillation including ingredient analysis/fermentation/production chemicals, and properties of gasses/liquids, pH, and pressure. Upon completion, students should be able to demonstrate basic chemistry principles/laboratory techniques to assess/control chemical properties associated with major products of the alcoholic beverage industry.

### **Student Learning Outcomes**

1. Explain basic chemistry concepts and apply laboratory concepts to fermented beverage science.
2. Apply basic principles of quality management and control of chemical properties of fermented products.
3. Apply cleaning and sanitation requirements applied in the chemistry of brewing.
4. Explain the chemistry of brewing ingredients, brewing process including fermentation and post-fermentation.

## **BDF 225 Filtration & Finishing**

Class: 2      Lab: 2      Credit: 3

Prerequisites:    None

Corequisites:    None

This course covers processing/conditioning factors that affect the end quality and shelf life of fermented craft beverages. Topics include types/operation of filters, natural/forced carbonation, clarification, lagering, additives and product stabilization for packaging. Upon completion, students should be able to demonstrate an understanding of the processes associated with filtration, carbonation and finishing and their impact on the end product.

### **Student Learning Outcomes**

1. Examine the different types of filters used in the production of fermented beverages.
2. Discuss the different aids used in the clarification of beer and the development of haze formation.
3. Employ different methods of forced and natural carbonation.
4. Evaluate the operation and design of centrifuges.

## **BDF 230 Advanced Brewing**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    BDF 114 Craft Beer Brewing

Corequisites:    None

This course covers advanced brewing processes utilizing the equipment of an on-site brewery and fermentation facility. Topics include advanced beer making processes, analysis/monitoring of fermentation, specialty beer production, quality control, sustainable practices and facilities operations and management. Upon completion, students should be able to understand and demonstrate the proper applications of high volume brewing in a production facility.

### **Student Learning Outcomes**

1. Explain health and safety operations including chemicals, high temperature product and equipment to insure a safe workplace environment.
2. Produce fermented beverages using industry standard equipment.
3. Operate and properly control all related production equipment and raw materials in a safe and sanitary manner.
4. Introduce specialty beer production and related operational requirements.
5. Apply quality control standards to the production of fermented products.

## **BDF 230A Advanced Brewing Lab**

Class: 0      Lab: 2      Credit: 1

Prerequisites:    None

Corequisites:    BDF 230 Advanced Brewing

This course provides additional laboratory experience for enhancing student skills in advanced brewing processes utilizing the equipment of an on-site brewery and fermentation facility. Topics include advanced beer making processes, analysis/monitoring of fermentation, specialty beer production, quality control, sustainable practices and facilities operations and management. Upon completion, students should be able to demonstrate the proper applications of high volume brewing in a production facility.

### **Student Learning Outcomes**

1. Explain health and safety operations including chemicals, high temperature product and equipment to insure a safe workplace environment.
2. Produce fermented beverages using industry standard equipment.
3. Operate and properly control all related production equipment and raw materials in a safe and sanitary manner.
4. Introduce specialty beer production and related operational requirements.
5. Apply quality control standards to the production of fermented products.

## **BDF 236 Brewing/Packaging Maintenance**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course covers the equipment in a brewing, distillation and fermentation facility and the techniques used for maintenance and troubleshooting. Topics include types of equipment, the role of equipment used in filling and packaging, troubleshooting, and the role of a maintenance technician. Upon completion, students should be able to set up, maintain and troubleshoot equipment in a brewing, distillation and fermentation facility using techniques appropriate for the industry.

### **Student Learning Outcomes**

1. Demonstrate safe practices and procedures with tools, materials and industry accepted test equipment covered in the course.
2. Demonstrate appropriate use of test equipment, evaluate equipment performance and apply appropriate troubleshooting techniques.
3. Interpret and use equipment diagrams, symbols, and schematics.
4. Describe principles and operations related to brewing, distillation and fermentation.

## **BDF 240 Seasonal Beer Production**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course covers the brewing of seasonal and specialty beers using advanced brewing techniques. Topics include original recipe development, lab analysis, production techniques and packaging. Upon completion, students should be able to develop original recipes for seasonal and specialty beers, and provide analysis, production and packaging.

### **Student Learning Outcomes**

1. Develop original recipes for seasonal and specialty beers.
2. Demonstrate proper lab analysis of a developmental beer.
3. Demonstrate proper advanced production techniques in the development of a seasonal/specialty beer.
4. Demonstrate proper packaging of a developmental beer.
5. Develop label and branding for a market concept for developmental beer.

## **BDF 250 BDF Packaging & Materials**

Class: 2      Lab: 3      Credit: 3

Prerequisites: None

Corequisites: None

This course covers the practices associated with packaging including canning, bottling, box presentations and kegging of beer and distilled products. Emphasis is placed on techniques related to expansion of the product shelf life which may include container selection, temperature/light control and labeling, capping, and sealing options. Upon completion, students should be able to demonstrate and perform practical operations critical to packaging.

### **Student Learning Outcomes**

1. Analyze the principles of counter pressure filling of carbonated and non-carbonated beverages.
2. Implement a balanced draught system as used within the beverage industry for delivering beer from a keg.
3. Examine containers commonly used for packaging fermented beverages and the impact of cost and quality of packaging materials.
4. Evaluate appropriate keg, can and bottle filling technology for packaging requirements and sanitation requirements of such technology.
5. Analyze quality control tests and measurements on finished products.

## **BDF 261 Bev Marketing & Sales**

Class: 3      Lab: 0      Credit: 3

Prerequisites: None

Corequisites: None

This course covers the planning and resources required to market grains/hops/fruit and brewed or distilled products. Emphasis is placed on the nature of the craft beverage market including industry/consumer trends, economic, legal, and social considerations related to branding, pricing, promotion, and distribution. Upon completion, students should be able to demonstrate a basic proficiency of the marketing principles and practices for craft beverages and the grains/hops/fruit from which they are produced.

### **Student Learning Outcomes**

1. Clarify the federal, state and local regulatory requirements related to the distribution, sale and advertisement of fermented beverages.
2. Design product placement using established techniques in merchandising, branding and advertising to maximize revenue.
3. Examine organizational sales structure and strategies to positively impact return on investment.
4. Analyze internal control systems to marketing and sales to maximize revenue and reduce risk.
5. Design training models to increase sales team leadership, management and development of accounts.

## **BDF 261A Bev Marketing & Sales Lab**

Class: 0      Lab: 2      Credit: 1

Prerequisites:    None

Corequisites:    BDF 261 Bev Marketing & Sales

This course provides laboratory experience for enhancing student skills in the responsibilities and activities encountered in the marketing of grains/hops/fruits and brewed or distilled products. Emphasis is placed on the nature of the craft beverage market including industry/consumer trends, economic, legal, and social considerations related to branding, pricing, promotion and distribution. Upon completion, students should be able to demonstrate a basic proficiency of the marketing principles and practices for craft beverages and the grains/hops/fruit from which they are produced.

### **Student Learning Outcomes**

1. Clarify the federal, state and local regulatory requirements related to the distribution, sale and advertisement of fermented beverages.
2. Design product placement using established techniques in merchandising, branding and advertising to maximize revenue.
3. Examine organizational sales structure and strategies to positively impact return on investment.
4. Analyze internal control systems to marketing and sales to maximize revenue and reduce risk.
5. Design training models to increase sales team leadership, management and development of accounts.

## **BDF 270 Craft Beverage Business Lab**

Class: 0      Lab: 6      Credit: 2

Prerequisites:    BDF 110 Fermentation Production and BDF 111 BDF Safety & Sanitation

Corequisites:    BDF 115 Applied Craft Bev Microbiology

This course covers concepts of management, production, marketing and economics through hands-on experience in an on-site brewery/fermentation facility. Topics include management/control systems, marketing/distribution and product development/evaluation. Upon completion, students should be able to craft and market fermented beverages using appropriate management and production techniques.

### **Student Learning Outcomes**

1. Demonstrate proper beverage management principles including purchasing, storage and sales.
2. Demonstrate proper usage of cost control methods for merchandise and beverages.
3. Demonstrate appropriate keg, can and/or bottle filling for packaging and sanitation requirements.
4. Operate and properly control all related production equipment and raw materials in a safe and sanitary manner.
5. Demonstrate proper marketing principles related to distribution.

## **REF 211 Glycol Chiller Systems**

Class: 2      Lab: 4      Credit: 4

Prerequisites:    None

Corequisites:    None

This course introduces the fundamentals of glycol chilling equipment as found in the brewing industry. Topics include characteristics of glycol, principles of glycol chilling, the chiller, the refrigerant, glycol and piping circuits, freeze prevention, purging, and equipment flexibility. Upon completion, students should be able to describe the components, controls, and operations of glycol chilling equipment and perform basic maintenance tasks.

### **Student Learning Outcomes**

1. Demonstrate safe practices and procedures with tools, materials, and industry accepted test equipment covered in the course.
2. Identify and explain the theory, operating principle, and components of the glycol refrigeration system.
3. Identify tools, materials, and equipment in the glycol refrigeration industry.
4. Evacuate, charge, recover, and safely operate a basic glycol refrigeration system in accordance with EPA regulations.
5. Demonstrate glycol refrigeration piping techniques.

## **WLD 214 Sanitary Welding**

Class: 2      Lab: 6      Credit: 4

Prerequisites:    None

Corequisites:    None

This course covers the requirements for gas tungsten arc welding (TIG) of austenitic stainless steel tube, pipe, and plate. Topics include correct selection of tungsten, polarity, gas and proper filler rod with emphasis placed on safety, equipment set-up and welding techniques. Upon completion, students should be able to perform TIG welds with various electrodes and filler materials on austenitic stainless steel tube, pipe, and plate.

### **Student Learning Outcomes**

1. Demonstrate the use of TIG welding on austenitic stainless steel tube, pipe and plate in compliance with AWS for the selection of electrodes.
2. Perform a groove weld of austenitic stainless steel tube, pipe and plate in accordance with AWS code.
3. Perform a fillet weld of austenitic stainless steel tube, pipe and plate in accordance with AWS code.
4. Demonstrate safe equipment set-up, operation and shut down practices according to manufacturer's recommendations

## Career and College Promise Operating Procedures

Session Law 2011-145, the Appropriations Act of 2011, authorizes the State Board of Education and the State Board of Community Colleges to establish the Career and College Promise program, effective January 1, 2012.

Career and College Promise provides seamless dual enrollment educational opportunities for eligible North Carolina high school students in order to accelerate completion of college certificates, diplomas, and associate degrees that lead to college transfer or provide entry-level job skills. North Carolina community colleges may offer the following Career and College Promise pathways aligned with the K-12 curriculum and career and college ready standards adopted by the State Board of Education:

1. A Core 44 College Transfer Pathway leading to a minimum of 30 hours of college transfer credit;
2. A Career and Technical Education Pathway leading to a certificate, diploma or degree;
3. A Cooperative Innovative High School Pathway approved under Part 9 of Article 16 of Chapter 115C of the General Statutes.

### Core 44 College Transfer Pathway

1. The Career and College Promise Core 44 College Transfer Pathway requires the completion of at least thirty semester hours of transfer courses, including English and mathematics.
2. To be eligible for enrollment, a high school student must meet the following criteria:
  - a. Be a high school junior or senior;
  - b. Have a weighted GPA of 3.0 on high school courses; and
  - c. Demonstrate college readiness on an assessment or placement test (See Attachment 1). A student must demonstrate college readiness in English, reading and mathematics to be eligible for enrollment in a Core 44 College Transfer Pathway.
3. A high school junior or senior who does not demonstrate college-readiness on an approved assessment or placement test may be provisionally enrolled in a College Transfer Pathway. To qualify for Provisional Status, a student must meet the following criteria:
  - a. Have a cumulative weighted GPA of 3.5;
  - b. Have completed two years of high school English with a grade of 'C' or higher;
  - c. Have completed high school Algebra II (or a higher level math class) with a grade of 'C' or higher;
  - d. Obtain the written approval of the high school principal or his/her designee; and,
  - e. Obtain the written approval of the community college president or his/her designee.

A Provisional Status student may register only for college mathematics (MAT) and college English (ENG) courses within the chosen Pathway. To be eligible to register for other courses in the Pathway, the student must first successfully complete mathematics and English courses with a grade of 'C' or higher.

4. To maintain eligibility for continued enrollment, a student must
  - a. Continue to make progress toward high school graduation, and
  - b. Maintain a 2.0 GPA in college coursework after completing two courses.
5. A student must enroll in one Core 44 College Transfer Pathway program of study and may not substitute courses in one program for courses in another.
6. A student may change his or her program of study major with approval of the high school principal or his/her designee and the college's chief student development administrator.



7. With approval of the high school principal or his/her designee and the college's chief student development administrator, a student who completes a Core 44 College Transfer Pathway while still enrolled in high school may continue to earn college transfer credits leading to the completion of the 44-hour general education transfer core.
8. With approval of the high school principal or his/her designee and the college's chief student development administrator, a student may enroll in both a Core 44 College Transfer Pathway program of study and a Career Technical Education program of study.
9. Currently enrolled high school students (Fall Semester 2011) who have successfully completed a college transfer STEM course with a grade of "C" or better may be admitted into a Career and College Promise College Core 44 Transfer Pathway in Spring Semester 2012 without meeting the entry GPA or testing requirements (i.e. PLAN). Students will be required to meet course prerequisite requirements.

### **Career Technical Education Pathway**

1. The Career and College Promise Career Technical Education Pathway leads to a certificate or diploma aligned with a high school Career Cluster.
2. To be eligible for enrollment, a high school student must meet the following criteria:
  - a. Be a high school junior or senior;
  - b. Have a weighted GPA of 3.0 on high school courses or have the recommendation of the high school principal or his/her designee; and
  - c. Meet the prerequisites for the career pathway.
3. High school counselors should consider students' PLAN scores in making pathway recommendations.
4. College Career Technical Education courses may be used to provide partial or full fulfillment of a four-unit career cluster. Where possible, students should be granted articulated credit based on the local or state North Carolina High School to Community College articulation agreement.
5. To maintain eligibility for continued enrollment, a student must
  - a. Continue to make progress toward high school graduation, and
  - b. Maintain a 2.0 in college coursework after completing two courses.
6. A student must enroll in one program of study and may not substitute courses in one program for courses in another. The student may change his or her program of study major with approval of the high school principal or his/her designee and the college's chief student development administrator. A student may concurrently enroll in two CTE programs of study provided the exception has been approved by the college's Chief Academic Officer or his/her designee.

### **Cooperative Innovative High School Programs**

1. Cooperative Innovative High School Programs are located on college campuses, enroll 100 or fewer students per grade level, and provide opportunities for students to complete an associate degree program or earn up to two years of college credit within five years are defined as Cooperative Innovative High School Programs.
2. Eligibility requirements for Cooperative Innovative High School Programs are established jointly by local boards of education and local boards of trustees in accordance with G.S. 115C-238.50.
3. The State Board of Education and the State Board of Community Colleges may waive the requirement that a Cooperative Innovative High School Program is located on the community college campus.

### **Gateway to College Pilot at Durham Technical Community College**

Session Law 2012-142, the Appropriations Act of 2012, requires the State Board of Community Colleges and the State Board of Education to approve the Gateway to College program at Durham Technical Community College as a Career and College pathway pilot program. This program shall concurrently provide high school and college education to high school students who have previously dropped out.

Further, Section 8.7(b) requires the State Board of Community Colleges to include developmental education and curriculum course work associated with this program when computing budget FTE for Durham Technical Community College in the 2012-2013 fiscal year.

1. The Gateway to College Pathway Pilot is a dropout recovery program which allows students to complete an Adult High School diploma while concurrently earning college credits.
2. Eligibility is limited to students who have dropped out of Durham Public Schools, who are between the ages of 16 and 21, who test at the 9th grade level in Reading, and who demonstrate a commitment to the program through a structured intake process.
3. Students must be able to complete the Adult High School program by age 21, through a combination of high school credits already earned, Adult High School courses, and dual credit developmental education and college-level courses.
4. All developmental education and college-level courses must be mapped to dual credit for high school courses. Adult High School students may not enroll in college courses that are not mapped to award dual credit toward completion of the Adult High School diploma.
5. Students must demonstrate college readiness on an assessment or placement test to enroll in college-level English and math courses or other courses with developmental course prerequisites.

Durham Technical Community College shall report to the House and Senate Education Appropriation Subcommittees by March 1, 2013, on student outcomes and program costs, including administrative expenses incurred by Durham Public Schools and Durham Technical Community College.

### **Student Application Procedures**

1. The high school will document eligibility criteria (high school GPA and PLAN or other assessment scores) on the student's transcript. A Home school or non-public high school student must submit a transcript and official test scores from an approved assessment test.
2. Students must complete a college application to be admitted into a Career and College Promise pathway.

### **College Program of Study Approval Procedures**

1. A college must submit a program of study for each Career and College Promise program it plans to offer, using templates and program codes provided by the North Carolina Community College System Office.
2. Programs of study may not include elective options for students.
3. Programs of study must be approved before students can be enrolled.
4. By submitting and requesting approval for a Career and College Promise program of study, a college is verifying its capacity to teach all courses in the program of study.

### **Program Accountability Plan**

1. Colleges will assign student codes provided by the North Carolina Community College System Office.
2. The North Carolina Community College System Office and the Department of Public Instruction will report annually to the two governing boards on the following outcomes:
  - a. The impact of dual enrollment on high school completion
  - b. The academic achievement and performance of dually enrolled high school students.
  - c. The number of students who successfully complete college pathways or certificates while dually enrolled.
  - d. The persistence, completion rates, and academic achievement of students who continue into college programs after high school graduation.

### College Readiness\* Benchmarks on Approved Diagnostic Assessment Tests

Test	PLAN**	PSAT**	Asset (NCCCS Cut Score)	COMPASS (NCCCS Cut Score)	Accuplacer (NCCCS Cut Score)
English	15	45	41 Writing	70 Writing	86 Sentence Skills
Reading	17	47	41 Reading	81 Reading	80 Reading
Mathematics	19	47	41 Numerical Skills and 41 Int. Algebra	47 Pre-Algebra and 66 Algebra	55 Arithmetic and 75 Elem. Algebra

In addition to the diagnostic assessments, colleges may use the following SAT and ACT scores recommended by the testing companies as benchmarks for college readiness:\*

SAT		ACT	
English	500	English	18
Critical Reading	500	Reading	21
Mathematics	500	Mathematics	22

\*To be eligible for enrollment in a College Transfer Pathway, students must demonstrate college readiness in English, reading, and mathematics on an approved test or tests. Eligibility may be demonstrated by achieving the required scores on a single test or by combining test scores from any of the approved assessments. For example, a student may combine a 19 on PLAN math with an 86 and an 80 on Accuplacer sentence skills and reading to demonstrate college readiness.

\*\*PLAN and PSAT scores recommended by ACT and College Board as indicators of college readiness.