

DACUM Research Chart for Brewing Technology

Produced for



Some specific job titles associated with this occupational area include, but are not limited to, the following:

- Brewer
- Cellerman
- Packaging Specialist
- Distribution Specialist
- Lab Tech
- Sensory Analyst
- Maintenance Technician
- Keg Washer
- Warehouseman
- Bottler/Canner
- Draft Line/Account Specialist

This work was supported by a Carl D. Perkins grant to Central New Mexico Community College School of Applied Technologies.

Produced by



DACUM International Training Center
Columbus, OH

DACUM Panel

Bert Boyce, Brewmaster
Santa Fe Brewing Co.
Santa Fe, NM

Brandon Gonzales, Assistant Production Manager
Santa Fe Brewing Co.
Santa Fe, NM

Evan Gasper, Brewhouse Technician
Turtle Mountain Brewing Co.
Rio Rancho, NM

Mick Hahn, Head Brewer
Turtle Mountain Brewing Co.
Rio Rancho, NM

John Seabrooks, Director of Brewing Operations
Rio Bravo Brewing Co.
Albuquerque, NM

Noah Tuttle, Brewing Manager
Santa Fe Brewing Co.
Santa Fe, NM

James Warren, Director of Brewing Operations
Santa Fe Dining Inc.
Santa Fe, NM

DACUM Facilitators

Fang Chen
Michael Cranney
Nick Jones
Victoria Martinez
John Moser, Team Leader

June 23-24, 2016

DACUM Research Chart for Brewing Technology

June 23-24, 2016

DUTIES

TASKS

DUTIES	TASKS								
A. Manage Wort Production	A.1 Prepare malt bill	A.2 Prepare brewing water	A.3 Prepare brewing vessels	A.4 Mill grain (e.g., malt, rye, wheat)	A.5 Manage mashing process	A.6 Lauter wort	A.7 Boil wort	A.8 Separate trub from wort	A.9 Cool wort
	A.10 Aerate wort	A.11 Perform brew house CIP							
B. Manage Fermentation Process	B.1 Sanitize fermentation equipment (e.g., FVs, hoses, brinks)	B.2 Prepare yeast for pitching	B.3 Pitch prepared yeast	B.4 Check pH & specific gravity of green beer	B.5 Adjust fermentation temperature	B.6 Perform VDK tests	B.7 Dump trub	B.8 Collect yeast for re-pitch	B.9 Perform yeast quality checks
	B.10 Add ingredients to secondary fermentation (e.g., fruit, hops, coffee)	B.11 Complete secondary fermentation process	B.12 Complete EOF process						
C. Produce Finished Beer	C.1 Sanitize receiving vessels	C.2 Purge receiving vessels	C.3 Assemble transfer system	C.4 Sanitize transfer system	C.5 Purge transfer system	C.6 Create transfer system pressure balance	C.7 Prepare clarification agents (e.g., filter medium, finings, tanal)	C.8 Centrifuge finished beer	C.9 Filter fermented beer
	C.10 Transfer finished beer	C.11 Carbonate bright beer	C.12 Test bright beer carbonation	C.13 Perform fermenter CIP					
D. Package Finished Beer	D.1 Assemble packaging system	D.2 Sanitize packaging system	D.3 Purge packaging system	D.4 Prepare packaging materials (e.g., case boxes, cans, bottles)	D.5 Fill packaging system with beer	D.6 Fill beer kegs	D.7 Fill beer bottles	D.8 Fill beer cans	D.9 Hand-fill beer bottles
	D.10 Hand-fill beer cans	D.11 Label packaged beer	D.12 Code-stamp packaged beer	D.13 Palletize finished product	D.14 Warehouse finished product	D.15 CIP packaging system	D.16 CIP packaging vessels	D.17 Destroy damaged product	

DACUM Research Chart for Brewing Technology

June 23-24, 2016

Page 2

DUTIES	TASKS								
E. Maintain Quality Control	E.1 Assess raw ingredient quality	E.2 Assess process water quality	E.3 Assess malt grind	E.4 Calibrate temperature measurement instruments	E.5 Calibrate pH meter	E.6 Verify process temperatures	E.7 Measure pH levels	E.8 Measure specific gravity	E.9 Measure wort break
	E.10 Conduct yeast cell count	E.11 Calculate yeast viability	E.12 Calculate yeast slurry density	E.13 Conduct sensory evaluation of pitching yeast	E.14 Perform forced fermentation test	E.15 Perform microbiological tests (e.g., yeast, bacteria)	E.16 Perform sensory evaluations	E.17 Verify code stamp	E.18 Verify package fill level
	E.19 Measure dissolved oxygen	E.20 Measure package air	E.21 Assess product stability	E.22 Review consumer feedback					
F. Distribute Finished Beer	F.1 Establish partnership with distributors	F.2 Establish retail accounts	F.3 Review purchase orders	F.4 Verify product inventory	F.5 Build customer orders	F.6 Coordinate order shipping/deliveries	F.7 Deliver customer orders	F.8 Verify customer invoices	F.9 Verify product rotation
	F.10 Maintain draft lines	F.11 Market brands to accounts & distributors							
G. Perform Administrative Tasks	G.1 Manage production inventory	G.2 Develop production schedule	G.3 Manage recipe formulation	G.4 Record data for taxation purposes	G.5 Schedule equipment maintenance	G.6 Evaluate production efficiency	G.7 Audit licenses and permits	G.8 Manage accounts receivable	G.9 Participate in company meetings (e.g., event, performance review)
	G.10 Participate in digital marketing (e.g., social media, website)	G.11 Review company policies & procedures	G.12 Conduct visitor tours						
H. Participate in Professional Development Activities	H.1 Participate in professional organizations	H.2 Obtain professional certifications (e.g., Cicerone, alcohol server)	H.3 Participate in sensory training	H.4 Participate in competitive beer events	H.5 Work beer festivals	H.6 Perform market research	H.7 Participate in collaboration brewing	H.8 Participate in brewing technical conferences	H.9 Participate in continuing education
	H.10 Review professional journals								
I. Manage Specialty Processes	I.1 Prepare wood barrels	I.2 Prepare cask materials	I.3 Prepare bottle conditioning materials	I.4 Cultivate souring agents	I.5 Fill conditioning vessels	I.6 Blend conditioned batches			

General Knowledge and Skills

Knowledge

OSHA regulations
Industry terminology
Company policies and procedures
HACCP
Logistics
Beer science
Market
Fermentation science
Chemical handling
Beer sensory
TTB regulations
Alcohol rules & regulations

Skills

Basic math
Basic mechanical
Troubleshooting
Multitasking
Problem solving
Computer
Decision making
Time management
Microbiological handling
Analytical
Documentation
Public relations
Able to do heavy lifting
Leadership
Organization

Acronyms

DO Dissolved Oxygen
CIP Clean in Place
FV Fermentation Vessels
EOF End of Fermentation
HACCP Hazard Analysis & Critical Control Points
TTB Tax & Trade Bureau
VDK Vicinal Di-Ketone

Behaviors

Honest
Team player
Creative
Patient
Flexible
Observant
Trustworthy
Detail-oriented
Organized
Analytical
Persistent
Punctual
Level headed
Responsible
Hard working
Self motivated
Safety-oriented
Collaborative
Process-oriented

Future Trends and Concerns

Trends

Sustainability
Continued growth of craft brewing
Sour beers
Trend toward canning
Brewery collaborations
New equipment vendors/suppliers
Trend toward "drink local"
Food pairings

Concerns

Consolidation (big controls the market)
Raw material availability
Attention to safety training
Workplace hazards
Availability of packaging materials
Shelf space
DUI liability

Tools, Equipment, Supplies and Materials

pH meter
Thermometers
Air compressor
Scales
Forklift
Lubricants
Pallet jack
Cleaning supplies
Refractometer
PPE
Microsoft Office
Ladders
Centrifuge
Microscope
Incubator
Pumps
Buckets
DO meter
Hand trucks
Lab glassware
Regulators
Material handling equipment
Spray bottles
3D scanner
Flash light
Grain sieve
O-beer (software)
Pallet racks
Stillage
Gas stone
Boilers
Mash tun
Lauter tun
Kettles
Whirlpool
Heat exchanger
Mills
Liquor tanks
Water filters
Glycol chiller
Gas cylinders
Fluid handling equipment
Hydrometers
Canning/bottling line
Keg washer
Bright tanks
Fermenters
Serving tanks

Acids
Caustic
Salts
Raw ingredients
Packaging supplies
Scissors lifts
Sterilizer
Blow torch
Alcohol
Basic hand/power tools
pH drips
Hemacytometer
Multitool