Taking the Pathway

Understanding career direction in **beer making**

Food Processing Skills Canada

At Food Processing Skills Canada, our mission is to make certain that the Canadian food and beverage manufacturing sector is building an empowered and resilient workforce that is primed for growth.
We create industry-driven programs for Canada's 13,000+ food and beverage manufacturing establishments and the sector's 300,000+ people so that businesses and individuals can achieve their goals.
We are passionate about ensuring that Canadians, new immigrants, and temporary foreign workers have the training and confidence to successfully begin an exciting job or advance their career. We also want employers and educators to have the right resources so that they can nurture talent and create the perfect learning environment.

This project is funded by the Government of Canada's Sectoral Workforce Solutions Program.

ISBN 978-1-989541-14-2

Canada
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About Taking the Pathway

Canada's Agri-Food sector is a significant contributor to our nation's economy and was recently identified as one of Canada's top growth industries over the next 10 years. Despite this, the sector continues to face a critical labour shortage that, if left unresolved, will impede the industry's growth, employment opportunities, and overall sustainability.

How to Use the Career Pathway

This document provides practical information about the career paths available for workers involved in the brewing industry. In a time when attraction and recruitment of workers is important to keep up with demand, the career ladder can be helpful to educate potential workers about the opportunities and career pathways within the sector. The career ladder is a helpful tool for employers to attract, recruit and retain productive and skilled workers.

The career pathway for Distillers illustrates the progression of foundational level to management level positions. Definitions for these occupational levels can be found in **Appendix A**.

Cheers for Beer!

Canadians love beer – and this love results in significant economic impact. Research conducted by the Conference Board of Canada shows that beer supports 149,000 Canadian jobs and contributes $13.6 billion to Canada's GDP. In 2020, 85% of the beer consumed by Canadians was brewed in Canada. The COVID-19 pandemic increased the popularity of canned beer. In 2020, can accounted for 74% of national beer sales, followed by bottles with 21% and kegs with 5% of sales.[1]

The Art of Craft Beer

Have you ever heard the term 'craft beer' and wondered what it meant? While there is no universal definition, there are a few agreed upon qualities and principles that are used to define 'craft beer':

- The brewery is licensed by the Government of Canada to produce beer.
- The brewery is small; the majority of craft breweries produce less than 5,000 hectolitres of beer. No craft brewery in Canada produces more than 400,000 hectolitres of beer a year.
- Craft breweries are independently owned.[2]

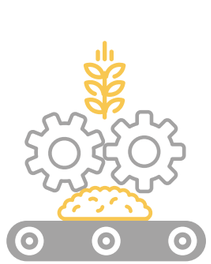
What Does Beer Mean to You?

Check out Beer Canada's video: What does the Canadian beer industry mean to you? https://www.youtube.com/watch?v=DcG9uGZ5QW4&ab_channel=BeerCanada

[1] Beer Canada: https://industry.beercanada.com/statistics
[2] Canadian Craft Brewers Association: https://ccba-ambc.org/about

the process of brewing beer

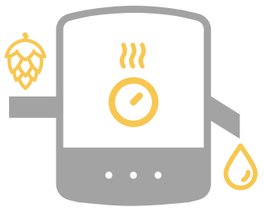
Humans have been brewing beer since around the 6th millennium BC, and the brewing industry has been part of most western economies since the 1800s. Don't let that fool you into thinking brewing is a quick and easy process. While the basic ingredients of beer are water and a fermentable starch, getting from water and grain to the coveted brew involves many steps.



1 MILLING

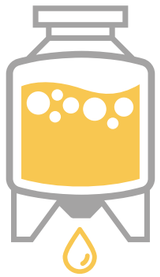
2 MASHING

3 LAUTERING



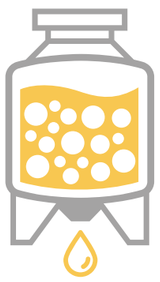
4 BOILING

COOLING

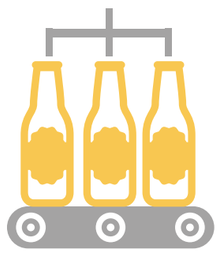


5 FERMENTING

6 CONDITIONING



FORCED CARBONATING



7 PACKAGING

Check out Beer Canada's video: Brewing Process in a Nutshell https://www.youtube.com/watch?v=bc325joO4Vc&ab_channel=BeerCanada

MALTING AND MILLING Malted barley is barley grains that have started the germination process. The malting process is done so that the enzymes in the grain will form that are necessary for converting the starches in it into sugar.

1 **MILLING** Milling is a process in which the husk or outer layer of the grain is crushed, and the inside is broken up to allow the mashing liquor to access the entire grain. This is a very crucial step in the process because milling improperly can break a beer before the brewing has even begun. The key is to crush the grains enough so that it exposes the starchy center of the barley seed without damaging the grain hulls that encase them.

2 **MASHING** Mashing is the brewer's term for the hot water steeping process that hydrates the barley, activates the malt enzymes, and converts the grain starches into fermentable sugars. Brewers monitor the mash temperatures very closely. The types of sugars that are produced by the enzymes can be controlled by the raising and lowering of the temperature.

3 **LAUTERING** Lautering is a process in which the mash is separated into two forms; the residual grain and the sugary clear liquid known as wort. Wort gives the beer its fundamental flavors, including those of the grains and hops that the brewer's recipe calls for.

4 **BOILING** After the wort has been separated from the grain by lautering, it is brought to a prolonged boil. Boiling sterilizes the beer. It is also during the boiling process that hops are introduced to the wort. The length of time that the wort is boiled lends to the bitterness of the beer. After the beer is boiled, it is cooled quickly because it will begin to oxidize and produce undesirable flavors.

5 **FERMENTING** Fermentation mostly takes place in stainless-steel vats. This is when the yeast is added and begins to eat the sugars created during the mash. As the yeast eats the sugar, carbon dioxide and alcohol are expelled. Fermentation time varies. If the brewer is producing an ale, the time may only be a few days. However, a lager may take months of fermentation.

6 **CONDITIONING** During the conditioning period of beer, the yeast becomes dormant and settles out of the beer, collecting at the bottom of the tank. The beer is then filtered to remove any remaining yeast and large proteins.

7 **PACKAGING** Once conditioning is complete, the beer is packaged. Beer can be packaged in bottles, cans and kegs. It is common practice for brewers to force carbonate their beer prior to packaging because during the fermentation process CO_2 is allowed to escape due to the buildup of pressure which could potentially cause the tanks to rupture.[3]

[3] All Things Treasure Coast: Brewing Process: https://www.allthingstreasurecoast.com/Beer/Beer/p-Brewing-Process.html

Education

At the time of publication, the following post-secondary programs exist in Canada for brewing:

Niagara College Canada
Brewmaster and Brewery Operations Management

As a graduate of Canada's first Brewmaster and Brewery Operations Management program, you are ready to be at the forefront of the ever-expanding brewery, microbrewery, and brewpub industries.

This two year diploma program at the Niagara-on-the-Lake Campus provides students with specialized education in brewing technology, sensory evaluation, quality control, brewery operations, sales management, and advanced business applications. Hands-on, experiential learning occurs at the on-campus Teaching Brewery led by award-winning brewmaster faculty. On-site hop yard and local farm products enable students to brew a full range of beer styles with students eligible to obtain Institute of Brewing and Distilling (IBD) certifications.

Career opportunities for graduates include: Assistant brewer; brewmaster; brew pub or brewery operator; and more.

Learn more about the program at: https://www.niagaracollege.ca/winebeerspirits/program/brewmaster-brewery-operations/#overview

CTS Canadian Career College
Brewing Technician Diploma Program (Distance Education)

CTS Canadian Career College is proud to offer this 39-week Diploma Program which can be easily managed alongside your busy work schedule. This diploma program prepares the graduate for work in various breweries, including large-scale breweries or craft breweries. The classroom instruction will take place in an online distance learning model, enabling students to remain within their respective communities and not relocate to complete their training. Upon completion of the 5 month virtual classroom portion, students will be assigned to various breweries for the practical aspect of the training in a 300-hour internship, 10 Week Internship.

Learn more about this program at: https://www.ctsccc.com/brewing-technician/?gad=1&gclid=CjwKCAjwzo2mBhAUEiwAf7wjkrN_dti46n53bK42yO2vzhxs-8d_88lXlBYZV6TUSsQvUxPv0GP2-xoCRJcQAvD_BwE

Kwantlen Polytechnic University
Diploma in Brewing and Brewery Operations

Our two-year Diploma in Brewing and Brewery Operations teaches you the science, production, and business of brewing craft beer. The program combines a solid foundation in microbiology and brewing science with hands-on practical learning in our state-of-the-art, two-hectolitre pilot brewery, located on our Langley campus.

Small class sizes ensure you get the one-on-one support you need from our instructors, who have decades of brewing and beer industry experience. With their help, you'll develop critical skills and training with brewing equipment and technologies, recipe formulation, sensory evaluation, brewing chemistry and microbiology, production and packaging, sales and promotion, and management and supervisory skills.

Learn more about the program at: https://www.kpu.ca/brew

Olds College of Agriculture and Technology
Brewmaster and Brewery Operations Management

Learn the art, science, and business of the vibrant and continually evolving brewing industry at the 2,300 square foot brewing facility at Olds College. This two-year program provides you with hands-on training that includes developing recipes, sourcing ingredients, and conducting trial brews.

In alignment with the Food & Beverage Innovation Centre (FBIC), you will receive a solid grounding in technical, analytical, business, marketing and entrepreneurial skills needed in the brewing industry. During the program, you will have the opportunity to brew your own beer and potentially bring it to market within the Olds College Brewery Store.

Learn more about the program at: https://www.oldscollege.ca/programs/areas-of-interest/tourism-brew-meat/brewmaster-brewery-operations-management.html

career pathway for brewers

A COMMON CAREER PATHWAY FOR BREWERS CAN INCLUDE:

Brewery Labourer

Brewery Labourer is an entry-level position that provides an individual with an introduction to brewing and the brewery environment. Labourers may be involved in material handling, cleaning, packaging, and other supportive activities related to the brewing process. This position serves as an excellent education on what is involved in beermaking and can help an individual to decide if they would like to pursue brewing as a career.

Skill Level: Foundational Skill (FS)

Educational Requirements: No prior experience or training in a brewery; high school diploma or equivalent may be required/preferred; training is provided on-the-job.

Related NOC Code: NOC 95106
– Labourers in food and beverage processing

Cellar person

Cellar persons play a critical role in the cleaning, sanitation (including Cleaning In Place and Sanitizing in Place – CIP and SIP) and preparatory tasks for beer production, including fermentation vessels, tanks, kegs and other brewing equipment. They also play a role in organizing and managing the raw materials used in brewing and may be responsible for milling grain. Cellar persons harvest yeast and dry hops and check specific gravity and carbonation levels. They are also involved in the canning, bottling and kegging of finished beers. Depending on the size of the brewery, the cellary tasks may be completed by the brewing team. In large breweries, cellar person is often a dedicated role and is not directly involved in the production process. They may also assist the brewing team as required (depending on the individual's skill level)

Skill Level: Semi Skill (SS)

Educational Requirements: 1-2 years as a brewery labourer may be required; high school diploma or equivalent is required; post-secondary education in brewing or knowledge of the brewing process may be required.

Related NOC Code: NOC 94140
– Process control and machine operators, food and beverage processing

Career progression from an Operator to front-line brewing positions typically requires post-secondary education/training.

Assistant Brewer

Assistant Brewers work under the supervision of the Brewers. They are responsible for assisting in the entire process involved in the production of beer, including wort production. They also play important roles in quality control – including ensuring proper cleaning and sanitation and performing quality checks in accordance with the brewery's quality control program. They may also interact with customers -particularly at craft breweries.

Skill Level: Semi Skill – High Skill (SS - H)

Educational Requirements: 2+ years in a Labourer/Cellary position OR post-secondary education in brewing may be required. Typically, Assistant Brewer would be the highest position to attain without post-secondary education (if the individual has the required experience). Depending upon the educational background of the individual, this position could be viewed as a semi skill (experience only) or high skill (formal education).

Related NOC Code: NOC 94140
– Process control and machine operators, food and beverage processing

Brewer / Craft Brewer

The Brewer is responsible for the complete brewing process from milling to wort production, to fermentation to filtration. They also collaborate with the entire brewing team to promote continuous improvements to the process and products. Brewers have specialized knowledge in the art and science of brewing and are often involved in developing and brewing test batches for new products. They also lend their palettes to sensory taste panels and quality control testing. Many Brewers also complete basic laboratory work, including pH measurements, extract measurement and ABV analysis (i.e., to measure the alcohol content in the beer). They oversee and, in many cases, participate in cleaning and sanitizing tasks and oversee cellar management, including yeast pitching, daily fermentation and dry-hopping.

Skill Level: High Skill (H)

Educational Requirements: Post-secondary education in brewing is often preferred (and in some cases required).

Related NOC Codes:
NOC 94140 – Process control and machine operators, food and beverage processing;
NOC 94143 - Testers and graders, food and beverage processing

Lead Brewer / Head Brewer

In larger breweries, the Lead Brewer typically has the most experience of all Brewers and blends their knowledge of the science and art of brewing, with people management. Lead Brewers may also be responsible for purchasing decisions, setting production goals, and managing resources related to the brewing process. They also consider the marketability of the beers that they are producing and may work with the marketing and research and development (R&D) teams to develop beers that meet customer demands. The Lead Brewer works closely with the Brewmaster/Master Brewer (if employed by the brewery) to ensure consistent production and quality.

Skill Level: High Skill (H)

Related NOC Codes: NOC 94140
– Process control and machine operators, food and beverage processing

Brewmaster / Master Brewer

Depending upon the brewery, the top production role will be the Head Brewer or the Brewmaster. In some facilities, the title of Brewmaster is reserved for individuals who have completed formal education in brewing. In Germany, the title “braumeister” implies the successful completion of some formal brewing education and the attendant degree. Some breweries in Canada follow this line of reasoning and reserve/assign the title accordingly. Brewmasters are responsible for all aspects of the beer making process, like selecting ingredients, creating beer recipes, preparing beer mixtures, overseeing the fermenting process, and managing the packaging. Brewmasters have a vast knowledge of the brewing process as a whole and are able to use this extensive knowledge to ensure quality and create new products.

Skill Level: Supervisory Skill (S) to Management Skill (M) depending on organizational structure of brewery

Educational Requirements: Completion of formal education in brewing; typically 5+ years of experience as a Brewer is required to hone the skills of a Brewmaster.

Related NOC Code: NOC 92012
- Supervisors, Food and Beverage Processing

Brewing Supervisor

Brewing Supervisors, typically supervise and coordinate the activities of all workers involved in the production and packaging processes. In smaller operations, the role of Supervisor and Lead Brewer/Brewmaster are interchangeable. In larger facilities, the Brewery Supervisor is responsible for all personnel, whereas the Lead Brewer or Brewmaster is responsible for the oversight of workers directly involved in the brewing process. Knowledge of the production process (inclusive of warehousing, brewing, and packaging), as well as skills in human resource management are critical for this role.

Skill Level: Supervisory Skill (S)

Educational Requirements: Post-secondary training in brewing may be required; minimum 5-7 years in a lead/supervisory production role in the food and beverage processing industry is preferred. Additional training in management and business operations is a strong asset.

Related NOC Code: NOC 92012
- Supervisors, Food and Beverage Processing

Brewing Production Manager

Brewing Production Managers plan and coordinate the entire brewing process, which includes managing staff, scheduling production runs, ensuring and acquiring the raw materials required for production and ensuring that all equipment is operating at optimal performance. In addition to overseeing the brewing process, they manage production, supervise the packaging process, and ensure a safe work environment for all. The Brewing Production Manager works closely with the executive management team, as well as the Head Brewer/Brewmaster and/or Brewing Supervisor to ensure that the brewing process remains consistent, the quality remains high and that production goals are met.

Skill Level: Management Skill (M)

Educational Requirements: Post-secondary training in brewing may be required; minimum 6-8 years in a lead/supervisory production role in the food and beverage processing industry is preferred. Additional training in management and business operations is a strong asset.

Related NOC Code: NOC 90010
- Manufacturing Manager

brewer career pathway

M MANAGEMENT SKILL LEVEL

Brewing Production Manager

Post-Secondary Education typically required; strongly preferred;
business management skills and experience advised.

Minimum 6-8 years in supervisory roles.

S SUPERVISORY SKILL LEVEL

Brewing Supervisor - After 5-7 years as a Brewer

Brewmaster / Master Brewer – After 5+ years as a Brewer

Post-Secondary Education typically required; strongly preferred

HS HIGH SKILL LEVEL

Lead / Head Brewer

Brewer / Craft Brewer

Assistant Brewer – Typical entry-level from post-secondary

Post-Secondary Education typically required; strongly preferred

SS SEMI SKILL LEVEL

Cellar Person

Assistant Brewer (in some Breweries)

Experience as Brewery Labourer is typically required

FS FOUNDATIONAL SKILL LEVEL

Brewery Labourer

No previous experience required,
high school diploma may be required

FORMAL EDUCATION

Post-Secondary programs Brewing

Brewers require training in the art and science of brewing.

appendix a

OCCUPATIONAL LEVELS
WITHIN THE CAREER PATHWAY

Foundational Skill Level FS	Foundational Skill Level positions are often the entry-level positions or those jobs that required no prior experience or training to work in the specific industry or sub-sector. A high school diploma or equivalent may be preferred but is not required by most businesses. Training for foundational skill level jobs most often occurs on the job; job shadowing is important for these entry-level positions.
Semi Skill Level SS	Semi Skill Level workers typically have 6 months – 1 year of experience working in foundational skill level positions within their facility. A high school diploma is often preferred but may not be a requirement. Workers in this job class typically receive training on the job and also receive WHMIS, food safety and food safety management system training, like HACCP. Workers who start in Foundational Skill Level Positions often progress into Semi Skill Level positions as they gain additional experience and training.
High Skill Level HS	High Skill Level Workers typically have at least 1 year of experience (typically 1-3 years) in their respective sub-sector and have often performed a range of tasks that are completed on the production/processing line. Depending upon the sub-sector, formal education may be required to transition from semi skill to high skill level positions. In general, a high school diploma is the minimum educational requirement for advancement into high skill level positions. Additional training related to supervising workers may be provided in-house. Workers receive WHMIS, food safety and food safety management system training. Workers in Semi Skill Level positions often advance to High Skill Level positions as they gain additional experience and training. In brewing, post-secondary education is typically required to assume high skill level positions (like Brewer).
Supervisory Skill Level S	Supervisory Skill Level workers typically have a minimum of 3-5 years of experience in high skill level positions within their respective sub-sector. Additional training in production management, supervising and employee management may be required and provided by the company. A high school diploma or equivalent is often a minimum requirement; additional post-secondary education is often required or considered a strong asset (sub-sector dependent). In brewing, supervisors often begin their careers as Brewers – a high skill level position. Supervisors must complete WHMIS, food safety and food safety management system training.
Management Skill Level M	Management Skill Level workers typically have a minimum of 6 years of supervisory experience within their respective sub-sectors. Leadership experience is considered an asset. A post-secondary education may be required or considered a strong asset. Additional training in management is often required of job incumbents. In general, Managers require WHMIS, food safety and food safety management system training.

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