

BREWING

Brewing is the process of malting, mashing, and fermenting just four ingredients - barley, water, hops and yeast. The actual process becomes seemingly more complicated when a good brew requires tightly controlled conditions like the right temperatures, the right times, and the right amount of ingredients.

Brewing combines a variety of disciplines including chemistry, microbiology, mathematics, engineering and business. The process involves a complex series of biochemical reactions converting barley to fermentable sugars and allowing yeast to live and multiply, converting those sugars to alcohol.

Career Opportunities

The brewing industry offers a variety of career opportunities in many different areas which may include:

- Brewing
- Retail and agency sales
- Manufacturing and Brewery Operations
- Brew Pub Operations
- Marketing and public relations
- Government and licensing

Specialized positions within the brewing industry are also possible for people with knowledge and education in Biochemistry, Microbiology, Food Science, Marketing, Sales, and Business Entrepreneurship, just to name a few.

Programs

- Diploma in Brewing and Brewery Operations (<https://calendar.kpu.ca/programs-az/science-horticulture/brewing/brewing-brewery-operations-diploma/>)

Courses

Registration in some course sections is restricted to students in particular programs. See Timetables - [kpu.ca/registration/timetables](http://www.kpu.ca/registration/timetables/) (<http://www.kpu.ca/registration/timetables/>) - for current section information.

Visit the BC Transfer Guide - [bctransferguide.ca](https://www.bctransferguide.ca) (<https://www.bctransferguide.ca>) - for information about course transfer in B.C.

HOPS 1100 3 credits Introduction to Brewing

Students will be introduced to the history of beer and brewing. They will study the evolution of the brewing industry and the role played by individuals, organizations and governments. They will learn about the historical role of beer in nutrition, the impact of alcohol on the human body and the responsible use of alcohol.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1105 3 credits Brewing 1

Students will learn the fundamentals of beer making, be introduced to basic ingredients used in brewing and will operate and perform equipment maintenance.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1110 3 credits Sensory Evaluation and Ingredients

Students will learn how various ingredients affect the style and quality of beer. Students will develop skills to critically evaluate a beer's sensory properties, judge quality and detect potential defects in beer. They will investigate the physiology and psychology of sensory perception, and assess and describe the elements of beer quality using the appropriate terminology.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1205 3 credits Brewing 2

Students will further develop their understanding of the beer making process. They will learn to select ingredients used in brewing. Students will operate and maintain equipment.

Level: UG

Prerequisite(s): HOPS 1105 and HOPS 1110
Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1211 4 credits Brewing Microbiology

Students will learn about the role of yeasts and other micro-organisms in the brewing process. They will gain the knowledge necessary to manage yeast and control fermentation in order to optimize the brewing process and control the finished beer flavour. They will develop practical skills in brewing microbiological laboratory analysis.

Level: UG

Prerequisite(s): Chemistry 11 (C+) or CHEQ 1094
Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1212 4 credits Brewing Chemistry

Students will review chemistry fundamentals as they apply to the production of beer with emphasis on production, fermentation, and filtration. Students will study the properties of gases and liquids, thermodynamics, pH, and pressure, and how they influence brewery production processes and beer quality. Students will develop knowledge and skills about the different types of chemicals used in beer production and maintenance of brewery hygiene. Students will become familiar with the lab equipment and lab techniques used to measure, monitor, and analyze the different chemical properties of beer.

Level: UG

Prerequisite(s): Chemistry 11 (C+) or CHEQ 1094
Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1213 3 credits**Brewing Equipment and Technology**

Students will learn the efficient use of unit operations and processing equipment employed by the commercial beer making industry. They will examine safety considerations, quality requirements, environmental issues, and food safety regulations. Students will be introduced to the fundamentals of brewery services such as pumps, process automation, and utilities.

Level: UG

Prerequisite(s): HOPS 1105

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 1214 3 credits**Introduction to Finishing and Packaging**

Students will study storage and different types of filters as they pertain to the clarification of beer. Students will practice carbonation methods and the stabilizing of beer ready for packaging operations. They will develop a basic knowledge of bottling, canning and kegging beer. Students will practice processing techniques and packaging.

Level: UG

Prerequisite(s): HOPS 1105

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2300 2 credits**Brewing Work Experience**

Students will participate in an approved work experience with a craft brewer, brewpub or major brewery (Minimum 455 hours). Students will be assigned to a variety of tasks at their work placement to increase their experience in the brewing and business operations of a brewery.

Level: UG

Prerequisite(s): Completion of all Year 1 HOPS courses

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2301 1 credit**Brewing Work Experience Dissemination**

Students will summarize their work experience gained in HOPS 2300 orally and in writing. They will participate in class discussions.

Level: UG

Prerequisite(s): HOPS 2300

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2305 3 credits**Brewing 3**

Students will learn advanced brewing techniques. They will independently operate and control brewing facilities. Students will further develop their knowledge of the beer-making process and the critical role of brewery safety.

Level: UG

Prerequisite(s): All of HOPS 1205, 1211 and 1212

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2310 3 credits**Product Evaluation and Judging**

Students will evaluate a beer's sensory properties under the categories of style profiles, quality and potential defects. Students will develop the necessary skills to organize and manage basic sensory panels within a brewery setting. They will be introduced to consumer sensory science practices. Students will develop strategies for participation in beer competitions.

Level: UG

Prerequisite(s): HOPS 1110

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2314 3 credits**Advanced Finishing and Packaging**

Students will study advanced filtration techniques and filter design. Students will explore the use of different carbonation and clarification methods. They will study methods used to stabilize beer. Students will assess the factors which contribute to proper beer service.

Level: UG

Prerequisite(s): All of HOPS 1212 and 1214

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2315 3 credits**Calculations and Recipe Formulation**

Students will develop beer recipes for testing in other brewing courses. They will use calculations to develop a brewery capacity plan, manage materials and determine precise alcohol levels as well as grain and hop usage rates in the beer recipes.

Level: UG

Prerequisite(s): HOPS 1205, 1212 and 1213

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2405 6 credits**Brewing 4**

Students in this final capstone course will apply advanced techniques of beer making to create a signature beer. Students will develop signature recipes that reflect a variety of seasonal and specialty beers. They will develop a complete analysis and report of each product.

Level: UG

Prerequisite(s): HOPS 2305, 2314 and 2315

Co-requisite(s): HOPS 2310

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2420 3 credits**Beer Marketing and Sales**

Students will be introduced to product marketing, sales management and promotional marketing techniques for the beer industry. Students will learn about important factors to consider in creating a sales and marketing plan and in setting up and running a sales and marketing department.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2421 3 credits**Brewery Management Business Planning**

Students will learn the fundamentals of brewery management business planning. They will study scheduling of brewery operations and personnel, legal compliance, and record keeping. Students will be introduced to the basics of managing employees and teams.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

HOPS 2422 3 credits**The Brewing Industry**

Students will study the scope of the beer industry and its impact on the community and the economy. They will be introduced to the governmental regulatory bodies and industry trade organizations which impact brewing companies. Student will learn about the distribution and container management systems that operate in British Columbia.

Level: UG

Attributes: F2A5 (<https://calendar.kpu.ca/courses-az/#courseattributestext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)