

Engineering a Craft Brewery – Belgium

ENGR 1920

Spring 2023 (2234)

Website on Canvas (<http://canvas.pitt.edu>)

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Reference Texts:

- *For the Love of Hops: The Practical Guide to Aroma, Bitterness, and the Culture of Hops* (Brewing Elements), by Stan Hieronymus, Brewers Publications
- *Malt: A Practical Guide from Field to Brewhouse* (Brewing Elements), by John Mallett, Brewers Publications
- *Water: A Comprehensive Guide for Brewers* (Brewing Elements), by John Palmer and Colin Kaminski, Brewers Publications
- *Yeast: The Practical Guide to Beer Fermentation* (Brewing Elements), by Chris White and Jamil Zainasheff, Brewers Publications
- *Brewing*, (2nd Ed.), by Michael J. Lewis and Tom W. Young, Springer, 2002
- *The Complete Joy of Homebrewing* (4th Ed.), by Charlie Papazian, William Morrow Paperbacks, 2014
- *Homebrewer's Companion* (2nd Ed.), by Charlie Papazian, William Morrow Paperbacks, 2014
- AHA Homebrewapedia, <http://wiki.homebrewersassociation.org>

Course Objectives

At the end of this course, students should be able to

- use engineering principles to describe, analyze, characterize, and design the brewing process.
- relate brewing process variables to style characteristics, particularly for Belgian styles
- evaluate brewing options and equipment for commercially relevant operations.
- justify brewing choices based upon brewing science, engineering, and economic considerations.

ABET Learning Outcomes

2 – Ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- Discuss the process by which Lambic beers are made, including the design variables available to the brewer.
- Compare and contrast modern brewing techniques with those historically used in Belgium.
- Discuss the process and use challenges from farm to brew for hops.
- Define the typical differences in palate and brewing process that leads to Belgian beers being different than their US counterparts.

Course Grades

The grade earned in this course will be determined by individual performance on the homeworks, sample analyses, and exam, as well as group or individual performance (as indicated on the project) on the mini-projects. The following ***absolute*** grade scale will apply:

If your average exceeds	Your grade will be <i>at least</i>
85%	A-
75%	B-
65%	C-

These percentages may shift down (but not up), at the instructor's discretion. It is not advisable to rely upon a grade shift, however.

The following components will contribute to the grade you earn in this class, according to the weights listed:

Travel Blog	65%
Sample Analyses	10%
Class Participation	25%
Total	100%

Grading Policy

Sensory Session: The course will provide students the opportunity to compare and contrast Belgian beers. Students will be expected to construct a BJCP-style review of up to two beers sampled from the sensory session. For students who do not wish to sample beer, short papers about the history of the style sampled, and the brewery hosting the session can be substituted for the sample analyses.

Travel Blog: Each student traveling to Belgium will keep a travel blog of breweries and venues visited, beers sampled, and their travel experiences. A minimum of 1 beer per day needs to be evaluated as per the Sensory Sessions BJCP style sheet (though the sheet need not be used). Blogs are to be posted to the **1920** Canvas site in an instructor-provided Discussion Board channel.

The Course Web Site (Canvas)

Discussion Board (on the Canvas site): Posts are to respect all individuals; trolling and flames will not be tolerated and will impact the class participation score unless more serious consequences are justified by University policy.

Online Resources: There are many online resources that can be used to supplement your learning in this class, and may continue to serve as resources in the future. A discussion board entry will be kept as these resources are identified, and students are encouraged to post links to interesting course-relevant online sites.

Academic Integrity

All evaluations will be completed individually. Consultation is permitted *only* as indicated by the instructor. Collaboration with others on non-project assignments will result in penalties consistent with the University Academic Integrity Guidelines, which may include an F grade for all parties involved. The University Academic Integrity Guidelines can be found here:

https://www.provost.pitt.edu/sites/default/files/academic_integrity_guidelines.pdf

SSoE Academic Integrity Guidelines are here:

<https://www.engineering.pitt.edu/academics/academic-integrity/>

Technology

Statement on (Classroom) Recording: “To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student’s own private use.”

The University’s Senate Educational Policy Committee issued the above statement on May 4, 2010 to address the issue of students recording a lecture or class section. In this class the term “activity” is interpreted to mean any organized group activity, both those listed in the itinerary and those organized *ad hoc*. Other use of such a recording is a violation of University policy and will be pursued through the appropriate University channels.

Disabilities

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS) [140 William Pitt Union, 412-648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users] as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Counseling

The University Counseling Center’s staff is dedicated to assisting students in their pursuit of personal and academic growth, to helping students gain a better understanding and appreciation of themselves, and to supporting students as they make important decisions about their lives. If you are in need of counseling services, please contact the University Counseling Center at 334 William Pitt Union (412) 648-7930. Refer to www.counseling.pitt.edu for details.