



Senior Calvin Kirtley leads the team in using auto siphons to prepare the beer for secondary fermentation.

Challenges

- Strict schedule to meet IPRO Day deadline
- Approval of equipment and supplies budget
- Ensuring safety in the lab
- Sanitation in brewing
- Teamwork across majors, years, distances, and subgroups

Objectives

- Learn about zymurgy
- Brew at least 10 gallons of beer during the semester
- Participate in Beer Competition
- Continuously refine process to meet consumer demand
- Investigate possibility of an on-campus brewery
- Attract sponsors to continue project in the future

Recommendations and Conclusions

In deciding which recipe of beer to brew, our group faced a major constraint: time. In order to create the best beer for a client, more extensive market research would need to be conducted and different recipes tested. The recipes can be modified according to the client's gustatory delights and adventurous spirit. Furthermore, brewing multiple batches would not only lead to a more consistent product, but also provide insight for modifications to the recipe that improve the beer's quality and refine the taste to fit the clients' desires. Practice makes perfect!

Faculty Advisor: Dr. Vijay Ramani

Teaching Assistant: Christopher Arges

Team Leader: Calvin Kirtley

Team Members: Amaka Mbaegbu, Anil Vasireddi, Bethany Nicholson, Brent Bijonowski, Bryce Swillum, Carol Mak, Carolyn Schumer, Chengjun Yang, Chris Wiseman, David Malon, Deepthi Veliyathuparambil, Elizabeth Corson, Jaeide Jawahill, Joannas Joseph, John Powers, Jonathan Taketa, Jongju Lee, Josh Evenhouse, Kari Gould, Kate Baker, Marisol Aguirre, Mathew Bednarz, Michael Kagehiro, Nga Pham, Spencer Jordan, Tracy Martinez, Yishu Wang, Zhengyi Ge

Thank you!

Blood, Sweat, and Beers thanks you for your time and hopes you enjoyed learning about zymurgy as much as we did! Cheers!



**Blood, Sweat,
and Beers**

IPRO 321:
Introduction to Zymurgy



Grain

(<http://www.whiskywisetastings.nl>)



Yeast

(<http://vitalityoflife.net/>)



Malt

(<http://www.brews.com/>)



Senior Amaka Mbaegbu measures the ginger roots to add to the wort.

Brewing Process

Developing the Wort

- Add steeping grain to boiling water, steep for 20 minutes, remove
- Boil the wort for 2-3 minutes, remove from heat
- Add malt, reboil the mixture
- Add hops, leave in mixture until wort is completed and set to ferment
- Continue adding more rounds of hops to brewer's taste
- Add additives, such as honey or orange peel, for desired flavor and boil
- Transfer wort to fermentation vessel and cool immediately

Fermentation

- "Pitch" the yeast and seal the vessel
- Allow Primary Fermentation to occur for two weeks
- Transfer to glass carboy and seal
- Allow Secondary Fermentation to occur for two more weeks to increase beer clarity and alcohol content

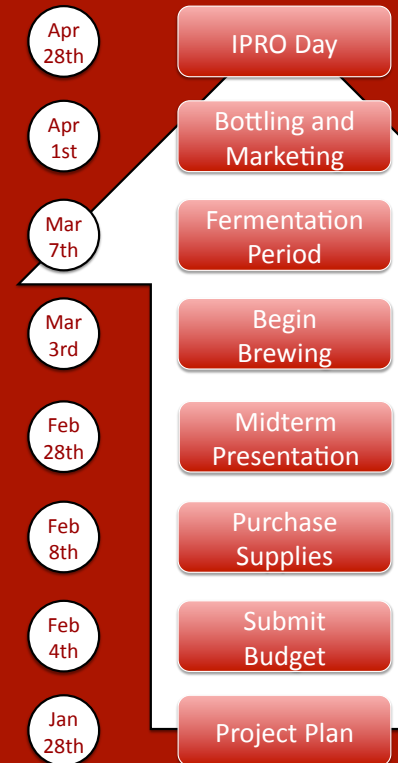


Hops

(<http://www.blogsmo.nroe.com/>)

Organization

- Flexible sub-teams to address specific work towards project goals



The timeline was structured around specific IPRO office deadlines and several potentially time-limiting steps: purchasing of equipment, brewing of the beer, and fermentation of the beer.