FERMENTATION SCIENCE OPTION

Department of Food Science & Technology
at Oregon State University

Our fermentation science program is one of just a handful in the nation, and our graduates are in great demand. As a fermentation science student, you will study all aspects of producing wine, beer, and fermented foods. It's a fun major—it's real science—but it's hands-on applied science. You learn it—then you use it. You'll address the biological, chemical, and physical processes of fermented foods and beverages. You'll also learn about the engineering, processing, quality, and safety aspects of the industry.

CAREER OPPORTUNITIES

Our graduates have historically enjoyed a high placement rate. We regularly get requests from a variety of employers seeking our graduates. Salaries are good—some of our graduates have enjoyed a starting salary of over $60,000 with a BS degree, with salaries in the 30's as an average starting salary range. Our graduates enjoy a variety of employment opportunities—we have graduates at the largest wineries and breweries, as well as at local cellars and craft breweries. We also have graduates at coffee, soy, and pickle companies, as well as artisan cheese producers. Some of our graduates find satisfaction in owning their own production facilities, while others enjoy the upward mobility of the corporate world. Many of our graduates enjoy international travel in their careers, and some students have completed internships abroad in such countries as France, Spain, Australia, and New Zealand.

ACADEMICS

Courses that form the core of the undergraduate degree option include:

- Fermentation Microbiology
- Brewing Science
- Brewing Analysis
- Wine Production Analysis and Sensory Evaluation
- Topics in Fermentation. A sampling of "Fermentation Topics" recently covered includes: "alcohol and health", "perries and ciders", "science of bread", "cheesemaking", "fermented vegetable products", "hops", "fermented dairy products", "profiles in brewing", "profiles in winemaking", and "flavor of alcoholic beverages".
- In addition, you will take background courses in Chemistry, Microbiology, Biology, and Math, Physics.

Undergraduate Research

If you are interested, you can receive credit for doing research as an undergraduate. Some examples of student projects include: developing gluten-free beer for people with allergies; anti-microbial properties of wine-based meat marinades; development of FETA cheese processing procedures; fermentation performance of selected yeast strains and their impact on the physical stability of beer; biochemical influences of selected yeast strains on beer flavor; impact of pH on bitter quality in beer, to name a few.

FACILITIES

Pilot Plant Brew/Malt House

The OSU Pilot Brewery is designed for teaching the fundamentals of brewing technology. It is a versatile 2 Barrel system that allows students to experiment and reproduce beers found around the world. The facility is manual and "hands on" lending to an experiential learning environment from grain milling to packaging. Recently added is an Alpha Laval Brew 80 centrifuge for clarification. Students will learn the principles of operation and maintenance for this industry standard form of clarifying beer. There is a bottling line to demonstrate packaging technology along with a new keg washer/filler that will be used to demonstrate principles of cleaning bulk packages.

A fully automated, 5 vessel brewery is on schedule to be installed in 2016. This system will showcase new technology, process flow, automation, and control – all important factors in running today's sophisticated brew houses. Both breweries together will create an educational playground for learning the art and science behind great beers, preparing students to work in a small craft brewery, large craft brewery, or an international corporate brewery.

Artisan Cheese Making Plant

The dairy plant features state-of-the-art artisan cheese making equipment from Holland and France. Currently students can make most cheese types in dairy processing classes and during the Food and Fermentation Science Club events. Students, with an interest in careers in dairy processing, are employed in the commercial production of Beaver Classic products. The dairy pilot plant is also utilized for research and extension short courses. Recently an ice cream freezer was purchased. It's utilized for the annual ice cream contest in FST 213 which allows students to explore their creative flavor development skills.

Pilot Plant Winery

The pilot plant teaching and research winery is located in neighboring Withycombe Hall and is composed of equipment necessary for wine- grape processing including a stemmer-crusher, presses, filtration systems, batch centrifuge, fermenter, bottling systems and storage facilities. The winery serves as a teaching tool for extension workshops. University owned vineyards provide winegrapes for teaching and research purposes.

Baking Lab

Cereal Scientist, Dr. Andrew Ross, conducts research in quality and utilization of Oregon grains. His well equipped baking laboratory is available to students enrolled in courses he teaches for FST, as well as to students involved in research in the laboratory.

FERMENTATION SCIENCE FACULTY

Teaching Faculty

Alan Bakalinsky, Ph.D.	University of California, Davis, 1989	Yeast genetics
Chris Curtin, Ph.D.	Flinders University of South Australia, 2005	Fermentation Microbiology
Mark Daeschel, Ph.D.	N. Carolina State University, Raleigh, 1982	Microbiology
Lisbeth Goddik, Ph.D.	Oregon State University, 1998	Dairy Foods
Paul Hughes, Ph.D.	University of London, 1990	Distilling
James Osborne, Ph.D.	Washington State University, Pullman, 2005	Wine Microbiology
Tom Shellhammer, Ph.D.	University of California, Davis, 1996	Engineering/Brewing
Elizabeth Tomasino, Ph.D.	Lincoln University, New Zealand, 2010	Enology Wine Science

Professional Faculty

Jeff Clawson, M.S.	Brewhouse Operations
Robin Frojen, B.S.	Cheese Master

FOR MORE INFORMATION

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