Course Syllabus

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HC441H Bread 101

CRN 32561, MW 12:00-1:50pm, B042 PSC

Course Description

Bread is a complex medium, looking nothing like the original seed of grain from which it originates. Yet when we mix a few simple ingredients we are able to induce a transformation that results in an edible, highly nourishing, staple food product crucial for sustenance in many cultures. In Bread 101, students will explore with a team of science faculty the energy requirements, biomedical and biochemical aspects, and local and sociopolitical context of bread production. Students will read and discuss a variety of primary and secondary literature related to wheat production, the microbiological, chemical, and physical processes that transform wheat into bread, the energy cost of this transformation, and cultural implications of bread production. There will be several field trips and guest speakers. Course work will include active discussions, short essays, problem sets, recipe analysis, and a presentation. This syllabus is called tentative because we may modify/update readings and topics as appropriate.

Course Goals:

1. Understand how wheat is grown and the basics of its genetics and domestication;
2. Consider the living nature of bread, the microbial dynamics, and gluten formation that transform wheat into bread;
3. Understand the local, historical, and political context of bread production using the Willamette Valley as a case study;
4. Explore the cultural significance of bread;
5. Explore the biomedical and biochemical aspects of bread production and digestion; and
6. Understand the global perspective of food production and genetically modified crops.

Students will have an opportunity to read and discuss a variety of primary and secondary literature around bread production. Students should leave the course more scientifically literate and feeling more empowered to understand the social implications; calculate energy requirements for production; understand basic yeast genetics; and be conversant in major historical, political, and ethical questions involving bread in particular and food in general. We will ask students to demonstrate their understanding of the topics through discussions, writings, problem sets, and larger projects.

Faculty	Email	Office Hours
Elly Vandegrift	ellyvan@uoregon.edu (mailto:ellyvan@uoregon.edu)	Wednesday 2-3pm 141 Willamette
Judith Eisen	eisen@uoregon.edu	By appointment
Karen Guillemin	kguillem@uoregon.edu	By appointment

Schedule

[Bibliography] [Feeding Africa]

Week	Date	Learning	Readings	Assignment

		Objectives		
Module 1 Introduction to Growth, Domestication, Energetics • define bread; • connect the living elements of bread to the final product; and • conduct a scientific experiment.				
	M 4/2	**Day 1: What is bread?** • Define “bread” from physical, biological, and cultural perspectives • Reflect on the ways that bread plays a role in daily life.		
Week 1	W 4/4	**Day 2: Perspectives of Bread** • Provide an overview of bread history of bread and social context. • Develop a common language to talk about bread.	Rubel (2011) **Food Timeline** **(http://www.foodtimeline.org/foodbreads.html)** (skim and bookmark for future reference) **Lenzer (2014) 1** **Lenzer (2014) 2** Hansel and Gretel	**Day 2 Writing** Begin a starter using Tartine instructions (in Lenzer article)
Week 2	M 4/9	**Day 3: Living microbiology** • Describe the importance of microbial consortia (as opposed to single strains) in food production; • Explain the biology and energetics of microbial metabolisms involved in grain	Woo (2017) optional: **DuVuyst et al. (2009)** start reading **Pollan.pdf** (this is due on the last day of class, but he has nice reflections about breadmaking, microbiology, and wheat)	**Day 3 Writing**

		fermentation. • Explore the composition and providence of sourdough starters		
	W 4/11	**Day 4: Scientific Experimentation** • Learn how to formulate a scientific hypothesis and develop an experiment to test it. • Explore how public science data can be used to test a hypothesis. • Develop the experimental design for testing a hypothesis relating sourdough starter growth and flavor.	**Dun Lab Sourdough Starter Project (http://robdunnlab.com/projects/sourdough/)** **Excerpts from the Bible and Qur'an**	Sourdough pre-reflection **Day 4 Writing**
Week	**Day**	**Learning Objectives**	**Readings**	**Assignments**
Module 2 Historical, Political and Local Context of Bread • identify how the local, historical, and political context of bread applies today; and • discuss implications of climate change on wheat production and wheat genetics.				
Week 3	M 4/16	**Day 5: Guest, Dan Armstrong, author and Willamette Valley food expert** • Trace the history and current practices of growing wheat in the Willamette Valley.	Armstrong (2008) **(http://mudcitypress.com/mudeden.html)**	**Bread Group 1** (Rusks) **Day 5 Writing**

		• Assess the movement to eat locally produced foods. • Translate the health, environmental, economic, and genetic benefits or costs of eating locally (and heirloom) produced wheat.		
	W 4/18	**Day 6: Field Trip to Camas Country Mill with Tom Hutton and Steve Jones** • Explain how wheat is milled. • Assess the mill production within a context of locally produced foods.	The Long Winter: **Where There's a Will** and **The Wheat in the Wall** optional: **exerpts from the Little House Cookbook**	Meet at 12noon for vans **Day 6 Daily Writing**
Week 4	M 4/23	**Day 7: Growing Wheat** • Diagram the life cycle of wheat plants in an agricultural setting including when wheat is planted, how it grows (photosynthesis), and when it is harvested. • Identify the parts of a wheat plant. • Reflect on climate change will impact wheat production globally.	**Herbek & Lee** (Read with an eye towards understanding the terms agronomists use to describe the growth of wheat and identifying key elements that can impact growth. In the "Grain Filling/Ripening" section read for connections to Tom Hutton's descriptions of milled flour.) **Harvey (2016)** (Think about how climate change will impact the growth decribed in the Herbert & Lee article.) **Cimons (2018)** (Read for connections to the growth of wheat, impacts of climate change, and the idea these researchers have to change wheat growth.)	**Bread Group 2** (Astor House Rolls) **Day 7 Daily Writing**

	W 4/25	**Day 8: Wheat genetics, history, and Green Revolution** • Identify locations where wheat was domesticated and the resulting genetics. • Illustrate how the history of wheat, including genetics and breeding affect yield.	The Economist (2005)	**Bread Group 3** (Crumpets) **Day 8 Writing**
Week 5	M 4/30	**Day 9: Guest, Steve Jones, Washington State University Wheat Geneticist and Director of the Bread Lab** • Summarize key feature of wheat genetics that lead to variability in crop production. • Identify ways that gluten contributes to the structure of bread.	Jabr (2015) **(https://www.nytimes.com/2015/11/01/magazine/bread-is-broken.html)** Philpott (2013) Browse the **Bread Lab** **(http://thebreadlab.wsu.edu/)** website	**Day 9 Writing** and include 3 questions you'd like to ask Dr. Jones based on the three readings for today.
	W 5/2	**Day 10: Field Trip to Noisette Bakery with owner Tobi Sovak** *(meet at 12noon by the Dad's Gate EMX station to go downtown, or meet at Noisette)* • Describe the terroir of wheat	**Collins (2012)** **(http://www.newyorker.com/reporting/2012/12/03/121203fa_fact_collins)** or **pdf**	Cultural Reading Paper **Day 10 Writing** include 3 questions you'd like to ask based on what you've learned about wheat and flour production.

		and bread. • Compare and contrast the biodiversity of yeast with a bakery: how are “wild” yeast selected, enriched, propagated, and whether variation in these strains account for variation in breads from different bakeries.		
Week 6	M 5/7	**Day 11: What bread should you buy?** • Compare bread labels to make informed consumer choices. • Participate in current discussions about whether wheat is nutritious or poisonous and why food anxieties endure in American culture. • Analyze different kinds of wheat used for bread (and other types of food) including nutritional content.	Appelbaum (2016) **(https://www.theatlantic.com/national/archive/2016/06/making-bread-great-again/489272/)**	**Bread Group 4** (Cornell Bread) **Day 11 Writing**
	W 5/9	**Day 12: Energetics of Wheat**	Goucher (2017)	**Bread Group 5** (No Knead Bread)

		• Explain how agriculture impacts global warming.		**Day 12 Writing**
Week	**Day**	**Learning Objectives**	**Readings**	**Assignments**
Module 3 Biomedical and global perspectives • explain the role of gluten in bread production and current health trends related to gluten; • discuss implications of genetically modified crops; • cultivate, bake, and discuss sourdough and bread.				
Week 7	M 5/14	**Day 13: All about gluten** • Define protein structure and components of gluten. • Explain why gluten is important in bread. • Solve bread baking dilemmas	**Biesiekierski (2017)**	**Day 13 Writing**
	W 5/16	**Day 14: Microbiome** • Explain how human microbial communities are studied. • Discuss how human diet is thought to shape human gut microbiome composition. • Explain experiment testing relationship between bread consumption and human gut microbiome composition and discuss the	Yong (2017) optional: **Korem et al. (2017)**	**Sourdough Experiment** **Day 14 Writing**

		results of this experiment.		
Week 8	M 5/21	**Day 15: Gluten sensitivity & Feeding Africa setup** • Summarize immune response to gluten – celiac disease – and its many potential complications (e.g. autoimmune disease, bone disease, cancer, diabetes, etc.) – as well as other types of gluten sensitivity and allergy. • Discuss how are crops modified using genetic engineering. • Explain advantages and disadvantages of genetically modified (GM) crops. • Use The Precautionary Principle. • Discuss food distribution issues in the in Africa. • Experience the role of international politics and trade in the scarcity of food. • Prepare for the two days of the Feeding Africa	**Specter (2014)** **Velasquez-Manoff (2013)** Kasarda (2013) **Henderson (2011)** pages 1-12	**Day 15 Writing**

		Game.		
	W 5/23	**Day 16: Gluten sensitivity part 2 & Feeding Africa Faction Meetings** • Factions will prepare for the two days of the Feeding Africa game.	Henderson (2011) pages 12-53	**Day 16 Writing**
Week 9	M 5/28	**Memorial Day No School**		
	W 5/30	**Day 17: Feeding Africa--Starvation or GMO Foods.** • The first game session is opened by the UN WFP representative. Then each African nation may make a very brief introductory statement if they wish. The remainder of the time is used primarily for the opposing sides to present their arguments. The African representatives are welcome to ask questions throughout the session.		**Feeding Africa Essays** for everyone except African leaders Posted to both **Assignments** and **Discussion Board** and prepartion for **Speeches** Day 17 Writing
Week 10	M 6/2	**Day 18: Feeding Africa--Starvation or GMO Foods and Wrap Up** • The second game session is		**Feeding Africa Essays for African Delegation** Posted to both **Assignments**

		opened by the UN WFP representative. Debate by the opposing sides will continue. During this session, the African national representatives should ask pointed questions aimed at determining how they will vote. The final portion of class will be reserved for the African nations to debate among themselves. This debate should be public, and anyone may comment if they wish to try to persuade reluctant nations. The session ends with each African nation announcing their position.		and **Discussion Board** preparation for final **Speeches**. **Day 18 Writing**
	W 6/4	**Day 19: Tartine Bread Finale** • Bake the Tartine bread with sourdough starter that has been cultivated all term.	**Pollan (2013)**	Tartine bread and final reflection

Assignments and grading:

Grades will be based on the following assessments throughout the term. These are fully described on Canvas.

10% Daily pre-class writing

10% Participation

10% Recipe Analysis (group baking and individual paper)

20% Sourdough Project (pre-reflection and experiment)

15% Assigned Reading paper

20% Feeding Africa Reacting to the Past Essay and Speech

15% Final Reflection

Final Grading Scheme

A+	98-100%	B+	88-89%	C+	78-79%	D+	68-69%
A	93-97%	B	83-87%	C	73-77%	D	63-67%
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%
						F	<59%

Expectations: We are committed to maintaining an open, friendly, respectful, and supportive learning environment by being receptive to your needs and concerns and to coach, motivate, inspire, and guide you toward the course objectives. The commitment we ask of you is to give your best effort, participate in group activities, ask questions if information or goals are not clear, respect your fellow students and instructors, and provide feedback to us as the course progresses. While we believe that the classroom is a place of partnership between students and teachers in learning, as your teachers, we are responsible for grading your progress in this course. Our job is to be objective in our assessments and to consider both effort and achievement in assigning grades. Grading is necessarily a complex process. By making our values and expectations clear to you, we hope that we are giving you the information you need to do your best in this class.

Participation Class activities are an integral part of this course and many of these activities cannot be made up outside of class time. It is the student's responsibility to arrange to complete class exercises when possible and to obtain notes and/or supplemental material missed during an absence. Participation includes not only working on activities in class, but also paying attention, asking questions, and coming to class to learn.

Attendance We expect students to arrive promptly and stay throughout the class. Please notify us in advance is you must leave early.

Preparation An outstanding student will arrive at class having studied (not just read) the assignment. He or she will have identified concepts or details that remain unclear from the reading and have formulated questions to ask during class time. Preparation also includes creating a schedule for the term that includes time for studying outside of class.

Making connections You bring a rich experience with you to class. Being engaged in the material we are striving to understand means placing that material into the context of your own experience. An outstanding student will actively make connections between concepts that he or she has learned previously. This can happen in and out of class.

Positive attitude Excitement, curiosity, determination, cooperation, discipline, attentiveness, are all components of a positive learning experience.

Talent Talents differ for individual students. You may possess exceptional intellect, unusual insight, superior organizational skills, incredible commitment, amazing determination, outstanding perseverance, or originality. Find your talent, let it show, and share it with others.

Superior performance Performance is the application of your time and skills in this class. The product of your effort is a pleasure to listen to or read and demonstrates that student care about their work and learning of the material.

Professionalism A scholar takes care with his or her learning and the products of his or her efforts. This extends to all aspects of his or her work, including attention to written and oral directions, proofreading, spelling, turning off cell phones before class, etc. Additionally, students are responsible for completing their own work and plagiarism (submitting someone else's work and claiming it to be your own) will not be tolerated.

Diversity

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities.

Academic Integrity

All students are expected to complete assignments in a manner consistent with academic integrity. Students must produce their own work and properly acknowledge and document all sources (ideas, quotations, paraphrases). Students can find more complete information about the University of Oregon's Policy on Academic Dishonesty in the University of Oregon *Student Handbook*.

Accommodations for Students

The University of Oregon is working to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center (formerly Disability Services) in 164 Oregon Hall at (541) 346-1155 or uoaec@uoregon.edu. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course.

Discrimination, Sexual Harassment, and Duty to Report

The UO is committed to providing an environment free of all forms of prohibited discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. Any UO employee who becomes aware that such behavior is occurring has a duty to report that information to their supervisor or the Office of Affirmative Action and Equal Opportunity (http://aaeo.uoregon.edu/ **(http://aaeo.uoregon.edu/)**). The University Health Center and University Counseling and Testing Center (http://counseling.uoregon.edu/ **(http://counseling.uoregon.edu/)**) can provide assistance and have a greater ability to work confidentiality with students. All UO employees are also required to report to appropriate authorities when they have reasonable cause to believe that any child with whom they come in contact has suffered abuse or any person with whom they come in contact has abused a child.

Inclusiveness

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities.

Safe Ride

Safe Ride is a free shuttle service that provides university students, faculty, and staff with an alternative to traveling alone at night, relying on others to take them home or being stuck in a potentially dangerous situation. Reservation Line: 541-346-7433

ext. 2 / For more information, visit our **website (http://pages.uoregon.edu/saferide/)** & **facebook (https://www.facebook.com/UOSafeRide/)**

Course Summary:

Date	Details	
Wed Apr 4, 2018	Day 2 Writing	due by 11:59am
Mon Apr 9, 2018	Day 3 Writing	due by 11:59am
Wed Apr 11, 2018	Day 4 Writing	due by 11:59am
	Sourdough Project Pre-reflection	due by 12pm
Mon Apr 16, 2018	Day 5 Writing	due by 11:59am
	Recipe Analysis Paper (4 students)	due by 12pm
Wed Apr 18, 2018	Day 6 Daily Writing	due by 11:59am
Mon Apr 23, 2018	Day 7 Daily Writing	due by 11:59am
	Recipe Analysis Paper (4 students)	due by 12pm
Wed Apr 25, 2018	Day 8 Writing	due by 11:59am
	Recipe Analysis Paper (4 students)	due by 12pm
Mon Apr 30, 2018	Day 9 Writing	due by 11:59am
Wed May 2, 2018	Day 10 Writing	due by 11:59am
	Cultural Reading Paper	due by 12pm
Mon May 7, 2018	Day 11 Writing	due by 11:59am
	Recipe Analysis Paper (4 students)	due by 12pm
Wed May 9, 2018	Day 12 Writing	due by 11:59am
	Recipe Analysis Paper (3 students)	due by 12pm
Mon May 14, 2018	Day 13 Writing	due by 11:59am
Wed May 16, 2018	Day 14 Writing	due by 11:59am
	Sourdough Experiment	due by 12pm
Mon May 21, 2018	Day 15 Writing	due by 11:59pm
Wed May 23, 2018	Day 16 Writing	due by 11:59am

Date	Details	
Wed May 30, 2018	Day 17 Writing	due by 11:59am
	Feeding Africa Essay for Speech	due by 12pm
	Feeding Africa In Class Speech	due by 12pm
Mon Jun 4, 2018	Day 18 Writing	due by 11:59am
	Feeding Africa - African Delegation Final Essay	due by 12pm
	Victory Points!	due by 11:59pm
Wed Jun 6, 2018	Final Bread	due by 11:59am
Fri Jun 8, 2018	Final Bread and Final Reflections	due by 11:59am
	Feeding Africa Participation	