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EGG 637: Omelet Design and Fabrication

3 credits

Held in Lola Tilly room 001

Meets 7:00-8:00am MWF

Prerequisites: EGG 601 (Molecular Gastronomy), CHEM 451 (Biochemistry--Metabolism)

Course website: <http://www.egg.uaf.edu/~bork/2012/egg637/> (and see also Blackboard)

Instructor: Dr. Sven Börk

Office: Lola Tilly room 002

Office hours: 8:00-11:00am MWRF

Telephone: 1 907 474-1800

Email: borkbork@yahoo.com

Required Textbook: [The Omlette Book](#), by Narcissa Chamberlain, 1958 edition, Knopf

Recommended readings: [The Breakfast Book](#), Cunningham & Cameron, 1987, Knopf

Required Supplies: griddle, non-stick skillet, whisk (eggs & butter will be supplied)

Course Description

From the course catalog:

EGG F637 Omelet Design and Fabrication

3 Credits Offered As Demand Warrants

This is a graduate level course in the design, analysis, and synthesis of the beaten-egg cooked foodstuff known variously as an omelet or omelette. *Prerequisites: EGG 601 and CHEM 451.*

This is a required core course in the Master of Egg degree program, but can be taken as an elective by interested graduate students in related fields. In addition to basic cooking knowledge, a detailed understanding of molecular gastronomy (EGG 601) and metabolic foodstuff processing (CHEM 451) is required to understand the relationships between chemical transformations and crispiness.

Course Goals

Generally, we will cover the detailed molecular transformations obtained in beating and frying eggs, primarily the effect of anhydrous heat on eggs and yolk, and the determination of the optimal trade-off in cooking times, from blackened Cajun style through tepid and runny.

Student Learning Outcomes

After completing this course, students will be able to:

- Explain how heat denatures protein chains in egg yolk and whites.
- Explain the effect of glucose-6-phosphate dehydrogenase on ingested lipids.
- Use this knowledge to cook a truly spectacular omelet.

Instructional Methods

The course is primarily lecture based, although in-class cooking assignments will be required weekly, and each month students will write a scientific paper. We will occasionally perform X-ray refraction spectrometry and NMR laboratory analysis in the XRF lab Reichardt 167.

Course Calendar (tentative)

1. September, Week 1: review of organic chemistry, metabolism of lipids, basic frying. Chamberlain pp 1-138.
2. Week 2: beating and protein tangling, review of poultry handling. Chamberlain pp 139-193. Analysis paper 1 topic due. Last day to drop.
3. Week 3: XRF lab analysis of egg whites. Chamberlain pp 194-257.
4. Week 4: Analysis paper in-class minireviews, analysis paper 1 final version due.
5. October, Week 5: Unsaturated oils and frying. Chamberlain pp 736-752. Synthesis paper 2 topic due.
6. Week 6: Butter and saturated fats. Chamberlain pp 753-897.
7. Week 7: Course review, midterm omlet, and post-exam review.
8. Week 8: Dairy group omlet additions. Synthesis paper 2 final version due. Last day to withdraw.
9. November, Week 9: Meat group additions. Chamberlain pp 291-297, plus assigned readings on website. Analysis paper 3 topic due.
10. Week 10: Vegetable group additions. XRF lab analysis of yolks. Chamberlain pp 258-290.
11. Week 11: Compatibility table of omlet additions. Analysis paper 3 final version due. Thanksgiving break.
12. Week 12: Pre-frying and 'fluffiness'. Synthesis paper 4 topic due.
13. December, Week 13: rheological fluids and 'mouthfeel'. Chamberlain pp 317-394.
14. Week 14: Synthesis paper 4 final version due. Final omlet.

Course Policies

Prompt attendance is required, and forms a small part of your grade. If you are not able to attend, or arrive after the class's start time, you must PREPARE A DETAILED WRITTEN EXPLANATION and hand deliver this to me. Polite participation in in-class discussions is also required.

Late assignments and homeworks normally receive no credit. You must attend exams on time. At my discretion, I may allow late work without penalty when due to circumstances beyond your control, such as your death.

Everything you turn in must be your own work--violations of the [UAF Student Code of Conduct](#) will result in a minimum penalty equal to THAT ENTIRE SECTION OF YOUR GRADE (for example, one plagiarized homework question will negate an otherwise perfect grade on all homeworks). However, even substantial reuse of other people's work is fine and not plagiarism if it is clearly cited; you'll be graded on what you've added to others' work.

In extraordinary circumstances, such as an ice storm or infectious disease outbreak, classes may be held on Blackboard/Elluminate Live.

Evaluation and Grading Policies

Your grade for the written assignments will be based on the clarity of your logic and prose, use of proper formatting for the paper and references (APA style), and comprehensiveness. Grade “A” papers present a clear, comprehensive, and convincing scientific argument in a lucid and engaging fashion; these papers are publication ready. Grade “B” papers may contain the occasional non-sequitur phrase, or miss a minor technical point; these papers may need some revisions to be accepted for publication. Grade “C” and below papers have glaring typographical or technical errors, or miss important topics, and would not be accepted for publication by a reputable journal. “Analysis” papers relate laboratory measurements to the current literature on understanding food composition and contents, while “Synthesis” papers describe integration of known methods from current literature into your own cooking style.

Your grade for cooking assignments will be determined as a equally-weighted combination of taste, texture, presentation, and detailed lab results from gas chromatography and nuclear magnetic resonance analysis. Neither written nor cooking assignments are graded on a curve, except in unusual circumstances.

Your understanding of gastronomic theory, and your ability to reduce this to practice will be evaluated using this combination of these factors:

- 20%: Two synthesis papers, in October and December.
- 25%: Midterm omelet, prepared during the midterm exam in October.
- 20%: Two analysis papers, in September and November.
- 25%: Final omelet, prepared during the final exam period.
- 5%: In-class cooking assignments.
- 5%: Attendance and class participation.

This percentage score is transformed into a plus-minus letter grade via these cutoffs:

score \geq 93%: A	score \geq 90%: A-
score \geq 87%: B+	score \geq 80%: B
score \geq 77%: C+	score \geq 70%: C
score \geq 67%: D+	score \geq 60%: D
otherwise F	

The grades “B-”, “C-”, “D-”, “F+”, and “F-” will not be given. “A+” is reserved for truly extraordinary work. At my discretion, I may round a grade up if it is near a grading boundary. The EGG department has a policy that a graduate course cannot count toward a graduate degree with a grade of C- or below, and an undergraduate course cannot count toward a graduate degree with a grade of B- or below.

Support Services

The EGG department maintains an eating lab in Lola Tilly room 001, staffed from 7:00am-8:00pm. There is an organic chemistry student study group that may be helpful; contact information will be provided on the first day of class.

I will work with the UAF Office of Disability Services (208 WHITAKER BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.