

Baking Labs for Secondary FCS Classrooms



Funded by Kansas Wheat Commission—Download at: www.kswheat.com
Testing coordinated by: Connie Nieman, Family & Consumer Sciences Teacher
Foods & Nutrition Department, Olathe North High School, Olathe, KS
Author: Sharon P. Davis, FACS Education Consultant

Dear Educator:

Offering an introduction to baking science in Family & Consumer Sciences or secondary classrooms is a tremendous opportunity to integrate personal, family, career and academic linkages in history, math, sciences—physical, nutrition, and consumer sciences—plus related technologies, marketing, leadership, critical thinking and communication skills.

National FCS Standards provide specified outcomes for these labs. The labs may stand alone along with the references and resource referrals. They are designed for use both in family nutrition courses or incorporation into a semester of baking science and exploring careers in baking.

The labs coincide with the following standardized outcomes:

Career, Community and Family Connections - Standard 1.0: Integrate multiple life roles and responsibilities in family, work and community settings. (Focus: 1.2; 1.3)

Consumer and Family Resources - Standard 2.0: Evaluate management practices related to the human. (Focus: 2.1; 2.2; 2.3; 2.4; 2.5)

Family - Standard 6.2: Demonstrate appreciation of diverse perspectives, needs and characteristics of individuals and families

Food Production and Services - Standard: 8.0: Integrate knowledge, skills, and practices required for careers in food production and services. (Focus: 8.1; 8.2, 8.7)

Food Science, Dietetics, and Nutrition - Standard 9.0: Integrate knowledge, skills and practices required for careers in food science, dietetics and nutrition. (Focus: 9.1 through 9.6)

Human Development - Standard 12.0: Analyze factors that impact human growth and development. (Focus: 12.2; 12.3)

Interpersonal Relations - Standard 13.0: Demonstrate respectful and caring relationships in the family, workplace and community. (Focus: 13.3; 13.5; 13.6)

Nutrition and Wellness - Standard 14.0: Demonstrate nutrition and wellness practices that enhance individual and family well being. (Focus: 14.1 through 14.5)

View Kansas FACS/OFAS Core Programs in entirety at: www.ksde.org/sfp/cate/facs/facs_core_prog.htm.

Baking interest often begins at home, and provides excellent contributions to functional literacy skills, family life and wellness. This interest at home can well be developed into a deeper knowledge of the science and career opportunities to be found in baking. These introductory baking labs meet criteria and build skills for careers and occupational training as well as healthy individuals and family life. Thank you for offering secondary students an introduction to baking.

Sincerely,

Cindy Falk, Domestic Marketing Specialist
Kansas Wheat Commission, www.kswheat.com

Educator Guide to the Baking Labs

The following experiential learning model is the basis for the labs.

Experiential Learning Model Used:

- #1: Review critical knowledge. Do Lab activities.
- #2: Record/share results, reactions and observations.
- #3: Apply critical thinking and processing skills
- #4 Connect experience to real work - personal, family, community, work.
- #5: Apply what was learned to similar to different situation(s); prices.

Kansas Wheat Commission provides:

- **Four Power Point lessons** provide teachers research-based information about the multiple outcomes baking science labs provide, the nutritional value of grain foods, basic wheat and flour science, and baking ingredient functions. Teachers may wish to “cut and paste” a learning level appropriate PP slide show.
- **Family and career applications.** Each lab bridges from home baking to baking as a career by introducing professional terms and techniques.
- **Baking glossary of Terms & Techniques and Measurements & Substitutions**
- **Nine stand-alone labs with one or two day hands-on options.** Labs may also require additional follow-up evaluation and discussion days.

<u>Lab Titles</u>	<u>Product(s) produced</u>
Flour Comparisons	Muffins; English Muffin Bread
Leavening (air, yeast, chemical, eggs)	Waffles
Yeast History and Science.	Flat Breads—Focaccia
Salt Savvy.....	Pita Bread
Fat Functions	Scones
Milk (Is Scalding Necessary?).....	Milk Bread
Substitution Science	Cookies—Thin, Soft, Chewy
Whole Grain Consumer Taste Test.....	Whole White Wheat Bread
Shaping 101 (Value Added Baking).....	Shaping rolls, braids, pretzels, dough art

- **Service Learning Options** to demonstrate skills and extend the classroom to real life situations.
- **Resources and References; nutrition analysis** for each recipe; **worksheets, rubrics, product evaluation guides** and **pre- and post-test.**
- **Baking training opportunities** listed for teachers and high school graduates.

Lab Equipment List

Teacher note: *From home baking to professional, using standardized methods and equipment are a huge part of having success each time you produce a product. Small variances in amounts of ingredients or temperature may have an undesirable impact. Help students understand that the use of standardized measurement equipment and methods are a critical part of the baking process.*

Classroom Supply List:

- Digital or balance ingredient scales are preferred and are the standard tool of professional bakers. Salter is one brand name. (Standardized dry measuring cups and the stir, spoon and level method of measurement are used if no scales are available.)
- Standardized measuring tools with English and metric—liquid and measuring spoons—of the same make for each lab
- Durable weight shiny aluminum baking pans**, if possible
Half sheet pans* (13 X 18-inch) or jelly roll (15 X 10-inch) baking sheet pans; 8- or 9-inch square; 9-inch pie plate; 8- or 9-inch round layer cake pans; 6-cup medium (2 ¾ inch) muffin; pans; 8 ½ X 4 ½ inch loaf pans
- *Buy from school food suppliers, companies manufacturing durable, test kitchen standard aluminum baking pans, retail stores OR www.doughmakers.com; www.kingarthurflour.com, www.bettycrocker.com
- **Read labels. care, maximum baking temperatures and whether use of pan spray is recommended.
- Graduated stainless steel or glass mixing bowls
- Large plastic sealable bowls or food tubs (half gallon to one gallon sized)
- Utensils: wire whisks, mixing spoons, spatulas, paring knives, cutting boards, saucepans; cookie and muffin scoops; plastic bowl scrapers, bench dough cutters; pastry brushes; rolling pins
- Oven space so no crowding of pans/product in the oven will occur
- Thermometers--oven and probe instant read food thermometers
- Large oven mitts
- Wire cooling racks
- Stove top and microwave oven
- Hand held mixers (if possible, the same type for each kitchen for comparable results)
- 5-qt. stand mixer with dough, mixing and whipping attachments
- Parchment or silicone pan liners; pan spray
- Ingredients for each lab for the recipe/formula used
- Sanitary dishwashing facilities
- Hand sinks for washing hands (Separate sinks are used for preparing food and washing hands for food safety, a standard for food service kitchens)
- Aprons—washable or disposable—for food safety purposes and to protect clothing
- Drying racks for dishes—avoid towel drying for food safety purposes
- Brooms, buckets, dish and lab cleaning supplies
- Fresh dish towels/cloths daily
- Plastic wrap, foil, plastic freezer bags
- Computer and internet access; food analysis software if possible (ESHA II is used in these labs.)
- Refrigerator and freezer space

Students provide:

Teachers: Work with the students to follow food preparation safety guidelines (See www.fightbac.org)

- Hair ties, nets or hats to restrain hair
- Aprons or food service coats, lab jackets (if they have one)
- Clean, appropriate dress—non-skid shoes, short or rolled up sleeves, no loose clothing

Table of Contents

Section Titles

Section 1: Why Learn to Bake?

Power point: Overview of outcomes and benefits baking skills offer

Section 2: Grain Food's Contribution to Health & Wellness

Power Point: Board the Grain Train reviews grain food nutrition basics, FDA wholegrain health claim and Dietary Guidelines

Section 3: Baking Glossary of Terms, Techniques and Ingredients

Baking Measurements and Substitutions

Essential reference handouts for students and teachers

Section 4: Baking Science from Field to Flour

Power Point: Wheat and milling history and science, selecting wheat varieties and flours for different food products

Section 5: Baking Science from Flour to Table

Power Point: Baking Ingredient Functions

Three segments covering basic functions in Quick Breads, Yeast Breads and Cookies

Labs:

Comparing Flours - Flour Absorption Test

Baking labs: Muffin Lab; English Muffin Bread

Leavening Logic - Chemical, yeast, air and eggs

Baking Lab: Waffles

Yeast Science - Yeast bread history and science

Baking Lab: Focaccia

Fat Functions (PLUS toasting nuts; conditioning dried fruit)

Baking Lab: Scones

Salt Savvy - Examine why salt is critical in yeast breads

Baking Lab: Pita Bread

Milk Matters - Is Scalding Old Fashioned or Essential?

Baking Lab: Milk Bread

Substitution Science - Experience the effects of changing fat, flour, and liquid in everyone's favorite cookie

Baking Lab: Cookie Science—Crisp, Light and Chewy

Whole Grains and Consumers - "Three wholegrain servings are key,"

How tough and tasty is it to bake with whole wheat flour?

Baking Lab: Consumers Taste Test Whole Wheat Bread

Shaping 101 - Value added baking

Baking Lab: The Art of Dough Shaping

Demonstrated Knowledge and Skill: Community Service Learning Experiences

Bakers Lend a Humane Hand for People and Pet Shelters

High Yield Bake Sales

Baking Resources and References