

On Baking

A TEXTBOOK OF BAKING AND PASTRY FUNDAMENTALS | FOURTH EDITION



Approach and Philosophy of On Baking



Revel for On Baking Fourth Edition

New for this edition, *On Baking* is now available in Revel—an engaging, seamless, digital learning experience. The instruction, practice, and assessments provided are based on learning science. The assignability and tracking tools in Revel let you gauge your students' understanding and engagement in and out of the classroom. This visibility into student performance, paired with your students' renewed energy for the material, empowers you to spend your class time on the meaningful instruction that only you can deliver. For more details, see the Comprehensive Teaching and Learning Package page ix.

This new fourth edition of *On Baking: A Textbook of Baking and Pastry Fundamentals* follows the model established in our previous editions, which have prepared thousands of students for successful careers in the baking and pastry arts by building a strong foundation based upon proven techniques. *On Baking* focuses on learning the hows and whys of baking. Each section starts with general procedures, highlighting fundamental principles and skills, and then presents specific applications and sample recipes or formulas, as they are called in the bakeshop. Core baking and pastry principles are explained as the background for learning proper techniques. Once mastered, these techniques can be used to prepare a wide array of baked goods, pastries and confections. The baking and pastry arts are shown in a cultural and historical context as well, so that students understand how different techniques and flavor profiles developed.

Chapters are grouped into four areas essential to a well-rounded baking and pastry professional:

- 1 **Professionalism** Background chapters introduce students to the field with material on culinary and baking history, food safety, tools, ingredients and baking science.
- 2 **Breads** Five chapters focus on breadmaking, from basic quickbreads to yeast breads and advanced artisan specialties such as sourdough breads and laminated doughs.
- 3 **Desserts and Pastries** Fundamental baking techniques used in the preparation of cookies, pies, creams, custards, cakes and frozen desserts are explained and then demonstrated with a wide range of formulas for components and finished products. A chapter on healthy baking and special dietary needs concludes this section.
- 4 **Advanced Pastry Work** Chapters on tortes and entremets, petits fours, chocolate, plated desserts, sugar work and confections demonstrate advanced concepts and techniques.

UPDATES

- **Three new chapters** expand coverage of yeast breads, cake assembly and sugar work.
- More than **375 new photographs and illustrations** provide clear representations of core preparations that are the foundation of any good baking textbook.
- Over **60 new formulas and variations** reflect up-to-the-minute trends in bakeries and foodservice operations.
- New **step-by-step photographs emphasize stages** in making key products such as yeast and sourdough breads, doughnuts, laminated dough, cake batters and pie crust, as well as cake decorating, torte assembly and advanced confectionery techniques.
- New **photographs illustrate contemporary plate presentation styles** to help students in their mastery of plating and presentation.
- Content revisions and updates were **written to improve readability** and align procedures, photos and recipes more closely.
- Content updates reflect **current trends in the world of baking and pastry**, such as the interest in food safety, gluten-free baking, use of whole grains, plant-based foods and advanced bread, pastry and confectionary techniques.
- **Enhanced food science coverage** highlights the functions of ingredients with additional information on flavor wheels.
- **Expanded tables and troubleshooting content** is included throughout the text to help students master fundamental bakeshop items such as puff pastry, pies, éclair paste and pastry cream.

Visual Guide

Easy to navigate, *On Baking* is divided into bite-sized subsections to optimize the learning process. We invite you to explore this new edition with the following guided tour through the features included.

After studying this chapter, you will be able to:

- ▶ describe and use various mixing methods, and explain the importance of gluten and moisture in mixing
- ▶ describe the three primary forms of heat transfer and explain how heat affects batters and doughs
- ▶ describe the various baking and cooking methods employed in the bakeshop
- ▶ describe the stages of the baking process
- ▶ explain the science of taste and basic flavor principles
- ▶ apply the science of taste and basic flavor principles

◀ Learning Objectives

Each chapter begins with clearly stated objectives that focus on what students can achieve by completing the material.

Chapter Introduction ▶

Introductory paragraphs summarize the main themes in each chapter and help reinforce topics.

Bread making dates back to ancient times. Over the centuries, bakers have learned to manipulate the basic ingredients—flour, water, salt and leavening—to produce a vast variety of breads. Thin-crust baguettes, tender Parker House rolls, crisp flatbreads and chewy bagels are created by careful selection and handling of the same key ingredients. A renewed interest in the traditional craft of baking has seen many new artisan bread bakeries open in recent years. Customers are demanding, and more restaurants are serving, exciting bread assortments at every meal. Although few baked goods intimidate novice bakers as much as yeast breads, few are actually as forgiving to prepare. By mastering basic procedures and techniques, bakers and pastry chefs can offer their customers delicious, freshly-baked goods made with yeast.

We divide yeast breads into three major categories: basic lean doughs, naturally-leavened and rye breads, and rich doughs. Basic lean doughs, such as those used to make crusty French and Italian breads, rolls and sandwich loaves, contain little or no sugar or fat. Such doughs are the focus of this chapter. Naturally-leavened and rye breads are made from lean doughs that require special handling to bring out their unique flavor. They are discussed in Chapter 8, Preferments and Natural Starters. Rich doughs, such as brioche and challah doughs, contain significantly more sugar and fat than lean doughs. Rich doughs bake into softer products with a tender crust and interior crumb. These are discussed in Chapter 9, Enriched Yeast Breads. A specific type of rich, flaky dough is made by incorporating layers of fat and flour, referred to as **lamination**. This dough is covered in Chapter 10, Laminated Doughs.

Margin Definitions ▶

Important terms are defined in margin notes to help with retention of new vocabulary and terminology.

emulsify to combine a fat and a liquid into a homogeneous mixture by properly blending ingredients

aerate to incorporate air into a mixture through sifting and mixing; to whip air into a mixture to lighten it, such as beating egg whites to a foam

Safety Alerts ▶

Brief notes highlight safety issues and stress the importance of incorporating food safety and sanitation into regular kitchen activities.

⚠ Safety Alert

Single-Use Gloves

Wearing clean single-use disposable gloves is the best way to avoid bare hand contact with ready-to-eat foods such as pies and sandwiches, or when garnishing or portioning baked goods such as cookies, cakes or brownies.

Procedure for Blind Baking a Pie or Tart Shell



1 Line the pie or tart pan or ring mold with dough. Dock the dough with a fork, if desired. Chill for 1 hour to maintain the shape during baking. Cut a piece of parchment paper into a round that is slightly larger than the pan. Using scissors, cut the edge of the paper into ½-inch- (1.2-centimeter-) wide strips the depth of the pan so that it will fit into the shell.



2 Press the parchment paper against the walls of the shell, allowing a portion of it to extend above the pan. Fill the pan with pie weights, raw rice or dried beans. Bake the weighted crust at 350°F (180°C) for 10–15 minutes.



3 Lift off the paper to remove the weights. Dock the crust with a fork and return it to the oven. Bake until golden brown, approximately 10–15 minutes. Cool, then fill as desired.

◀ Procedures for ...

Featured procedures for doing a specific technique include step-by-step instructions and photographs of various stages in preparing ingredients or executing a technique. These summaries encourage proper mise en place and organization.

Product Identification ▶

Hundreds of original photographs that identify ingredients, tools and equipment are provided. Written descriptions explore a huge variety of foods, such as fruits, sugars, nuts and chocolates, as well as portioning tools, cookware and bakeware.



Key limes



Rolling cutter



Flan rings or ring molds

Tables ▶

Tables and figures offer visual support and organize material to enhance instruction and learning.

CREAM (CRÈME) COMPONENTS			TABLE 16.2
FOR A	BEGIN WITH A BASE OF	THICKEN WITH	THEN FOLD IN
Bavarian	Custard	Gelatin	Whipped cream
Chiffon	Custard or starch-thickened fruit	Gelatin	Whipped egg whites
Mousse	Melted chocolate, puréed fruit or custard	Nothing or gelatin	Whipped cream, whipped egg whites, whipped egg yolks or all three

▼ Icons

Formulas are marked with various icons to indicate at a glance those addressing health and dietary concerns. The icon shown here identifies formulas that are good choices for health-conscious diners.

Good Choice

Gluten-free, vegetarian and vegan icons identify formulas in Chapter 18, Healthy Baking and Special Diets.

Gluten Free Vegetarian Vegan


Formulas ▶

Recipes, more appropriately called *formulas* in professional bakeshops, demonstrate techniques and provide delicious laboratory experiments for all skill levels.

♥ Good Choice

BRAN MUFFINS WITH RAISINS

YIELD 18 Muffins, 3½ oz. (105 g) each		METHOD Muffin	
Buttermilk	16 fl. oz.	480 ml	152%
Wheat bran	5 oz.	150 g	47%
Salt	0.4 oz. (1¼ tsp.)	10.5 g	3.5%
All-purpose flour	10.5 oz.	315 g	100%
Baking powder	0.3 oz. (2 tsp.)	8 g	3%
Baking soda	0.3 oz. (2 tsp.)	8 g	3%
Cinnamon, ground	0.2 oz. (1 Tbsp.)	6 g	2%
Eggs	3.3 oz. (2 eggs)	100 g	31%
Vegetable oil	6 fl. oz.	180 ml	57%
Brown sugar	12 oz.	360 g	114%
Raisins, conditioned	8 oz.	240 g	75%
Streusel Topping (page 145; optional)	as needed	as needed	
Total batter weight:	3 lb. 13 oz.	1857 g	587%



MISE EN PLACE

- Allow butter, eggs and buttermilk to come to room temperature.
- Zest lemon and orange.
- Grease pans.
- Preheat oven to 400°F (200°C).

◀ Mise en Place

French for “put in place,” the mise en place list accompanying in-chapter formulas points out what needs to be done *before* starting to prepare the formula, such as preheating the oven, chopping nuts or melting butter.

Measurements

All formulas include ingredient quantities in both U.S. and metric measurements. U.S. and metric measurements for all temperatures, pan sizes and other quantities are provided throughout the text.

Baker's Percentage

A way of expressing the ratio of ingredients unique to professional baking, baker's percentages are used primarily with breads, cakes and dough products and are provided with all of those formulas.

Variations

Variations provided at the end of some formulas show how to modify that formula to create different flavor profiles and new dishes.

Nutritional Analysis

All formulas include a nutritional analysis prepared by a registered dietitian.

TRADITIONAL SHORTBREAD

YIELD 84 Cookies, approximately ½ oz. (15 g) each		METHOD Icebox Cookies	
Unsalted butter, softened	1 lb.	480 g	84%
Powdered sugar	8 oz.	240 g	42%
Vanilla extract	0.5 fl. oz.	15 ml	3%
Salt	0.2 oz. (1 tsp.)	5 g	1%
Pastry or all-purpose flour	1 lb. 3 oz.	570 g	100%
Egg wash	as needed	as needed	
Total dough weight:	2 lb. 11 oz.	1310 g	230%


- Blend the butter and powdered sugar in a mixing bowl without creaming. Stir in the vanilla and salt, mixing thoroughly. Add the flour and mix until just combined.
- Divide the dough into four equal portions. Roll each piece of dough into 8-inch (20-centimeter) disks. Wrap in plastic. Freeze until hard, approximately 30 minutes.
- Remove from the freezer and unwrap, then lightly brush each disk with egg wash. Cut each disk of dough into eight wedges. Dock the wedges with a fork. Place on parchment paper-lined sheet pans.
- Bake at 375°F (190°C) until pale golden brown, approximately 15–20 minutes.

Variations:

Bergamot Shortbread—Add 12 drops oil of bergamot with the vanilla in Step 1. Divide the dough into four equal portions. Roll each piece into a 10-inch- (25-centimeter-) long cylinder. Freeze until hard, approximately 30 minutes. Brush each cylinder with egg wash, then roll in granulated sugar. Cut the cylinders into ½-inch- (1.2-centimeter-) thick slices and place slices cut side down on parchment paper-lined sheet pans. Dock the cookies with a fork and bake.

Pecan Shortbread—Add 7 ounces (210 grams/37%) of finely chopped pecans to the dough in Step 1.

Approximate values per cookie: **Calories 70, Total fat 4.5 g, Saturated fat 3 g, Cholesterol 10 mg, Sodium 30 mg, Total carbohydrates 8 g, Protein 1 g**



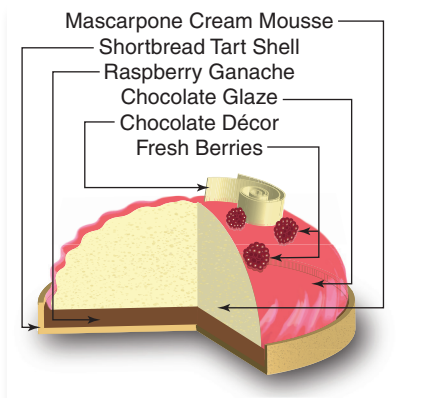


◀ Photographs

Formulas are illustrated with step-by-step photographs showing procedural techniques and photographs of finished products or plated desserts.

Color Illustrations of Torte and Entremet Assembly ▶

Full-color illustrations accompany torte formulas to show the internal assembly of these finished desserts.



TROUBLESHOOTING CHART FOR CUSTARDS		TABLE 16.1
PROBLEM	CAUSE	SOLUTION
Custard sauce watery	Custard overcooked	Adjust temperature; remove from heat promptly; cook in a bain marie; chill over an ice bath.
Custard sauce lumpy	Improper mixing of sugar and yolks	Whisk yolks and sugar together properly.
Pastry cream lumpy	Starch not incorporated properly	Blend starch with sugar before adding liquid; stir cream while cooking.
Pastry cream runny	Insufficient starch Undercooked starch Wrong starch used Overstirred after pastry cream has set	Adjust formula; measure ingredients properly. Cook longer. Adjust formula. Avoid stirring once pastry cream has set.
Baked custard curdled, lumpy or watery	Custard overcooked Insufficient water in bain marie	Adjust oven temperature; remove from oven promptly; remove from water bath to prevent carryover cooking. Increase water in bain marie.
Custard greasy	Too much fat	Adjust formula; use a combination of heavy cream and milk; use more whole eggs than yolks.
Cheesecake grainy	Overcooked Batter overmixed	Adjust oven temperature or baking time. Soften cream cheese before using; blend batter on low speed.
Cheesecake cracks	Baked cake cooled too quickly Batter overmixed	Cool slowly. Soften cream cheese before using; blend batter on low speed.

◀ Troubleshooting Charts

Troubleshooting charts enhance the learning experience by clarifying why a problem occurred and how an error can be corrected or avoided in the future.

The Story Behind the Chip

History was made in 1930 when Ruth Wakefield, innkeeper of the Toll House Inn in Whitman, Massachusetts, cut up a semisweet chocolate bar and added the pieces to cookie dough. She was disappointed that the pieces kept their shape when baked—until her first bite, that is.

Mrs. Wakefield contacted Nestlé Foods Corporation, which published her cookie recipe on the wrapper of its semisweet chocolate bars. The recipe's popularity led Nestlé to create and begin selling chocolate chips in 1939.

Today's cookie maker can now choose from milk, white, sweet or bitter chocolate chips, along with mint, butterscotch, peanut butter, cinnamon and other flavor chips, offered in several sizes by a variety of manufacturers.

◀ Sidebars

Sidebars present additional information on food history, food in culture and the background of professional food service. Flavor sidebars discuss how flavorings and other ingredients may be used to change the character of a product. Convenience product sidebars present prepared ingredients available to help streamline production. These sidebars help explain baking and pastry arts in a wider social context and provide additional resources that support a student's work in the bakeshop.

▼ Questions for Discussion

Questions for Discussion located at the end of each chapter are aligned with the chapter's Learning Objectives. These questions encourage the integration of theory and technique for a broader understanding of the material presented. Some questions require library or online research to emphasize the importance of assimilating information and seeking solutions beyond primary classroom materials.

QUESTIONS FOR DISCUSSION

- 1 Describe important influences on the baking industry in the 21st century.
- 2 Many contemporary confections and pastries are rooted in ancient recipes. Use the internet and library resources to research a product such as a cake, cookie or candy that was originally popularized in the 19th or 20th century and discuss how its taste and preparation technique have evolved over time.
- 3 List three different types of bakery operations and explain their similarities and differences.
- 4 What are the roles of the executive chef and the pastry chef in the modern kitchen brigade?
- 5 Describe the key attributes of a baking and pastry professional, and things you can do to develop the skills, taste and judgment required to advance your career.
- 6 Review the 2017 Food Code and discuss its impact on sanitary practices in the bakeshop.
- 7 What precautions should you take to ensure that food allergens do not contaminate baked goods, pastries and other foods?

Comprehensive Teaching and Learning Package



FOR THE INSTRUCTOR

Imagine what you could do if every student came to class ready to learn.

Revel is an engaging, digital, learning environment that prepares your students for class through a continuous experience—anytime, anywhere, on any device.

Using this learning-science based technology, your students will be able to:

- **Read, or listen to, the On Baking content on any device**
- **Practice concepts through multiple interactivities that check their understanding**
- **Stay engaged using videos and writing exercises**
- **Finish each chapter with an auto-graded quiz**

With the assignability and performance tracking tools in Revel, you can:

- **Set the pace for progress:** Revel allows educators to indicate precisely which reading must be completed by which dates. This clear, detailed calendar helps students stay on task by eliminating ambiguity as to which material will be covered during each class. When students understand exactly what is expected of them, they are better motivated to keep up.
- **Focus your time and resources on students' needs:** Using the performance dashboard, educators can monitor class assignment completion as well as individual student achievement. Actionable information, such as points earned on quizzes and tests and time on task, helps educators engage with their students in meaningful ways. For example, the trending column in the performance dashboard reveals whether students' grades are improving or declining, helping educators identify students who might need help staying on track.
- **Provide easy access on the first day of class:** LMS integration provides institutions, instructors, and students easy access to their Revel courses via Blackboard Learn™ and Canvas™. With single sign-on, students can be ready to access Revel's interactive blend of authors' narrative, media, and assessment on their first day.

INSTRUCTOR TEACHING RESOURCES

Online Instructor's Manual

Includes chapter outlines, objectives and summaries, a list of figures and key terms, and problem-based learning exercises.

PowerPoint Lecture Presentations

This comprehensive set of slides can be used by instructors for class presentations or by students for lecture preview or review. There is a presentation for each chapter, including a selection of full-color photographs from the book. Available through the Revel platform or the Instructor Resource Site.

TestGen (Computerized Test Bank)

The TestGen program contains preloaded text-based questions for instructors to use to create their own exams and quizzes.

FOR THE STUDENT

Revel for On Baking brings concepts to life!

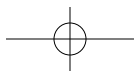
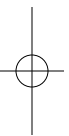
Revel was designed to help every student come to class ready to learn. Using this seamless, digital, learning experience, students are continuously engaged in reading, learning with interactives, exploring key topics with videos, and practicing with flashcards and check your understanding questions. Each chapter includes a shared writing activity covering a key topic, and ends with a quiz assessing mastery of the learning objectives.

This engaging presentation has been designed to encourage students to complete their assigned reading and retain what they've read, so they can show up to class better prepared to participate and learn.

- **Provides an all-in-one solution:** Fully digital and highly engaging, Revel gives students everything they need for the course—all in one continuous, integrated learning experience. Highlighting, note taking, and a glossary let students read and study however they like. Educators can add notes for students, too, including reminders or study tips.
- **Encourages practice and review:** Embedded assessments such as quizzes and concept checks give students opportunities to check their understanding at regular intervals before moving on. Assessments in Revel let instructors gauge student comprehension frequently, provide timely feedback, and address learning gaps along the way.
- **Enables learning anytime, anywhere:** The Revel mobile app also lets students read, practice, and study—anywhere, anytime, on any device. Content is available both online and offline, and the app syncs work across all registered devices automatically, giving students great flexibility to toggle between phone, tablet, and laptop as they move through their day. The app also lets students set assignment notifications to stay on top of all due dates. Available for download from the App Store or Google Play.

Audio available on any device, including Alexa!





On Baking

A TEXTBOOK OF BAKING AND PASTRY FUNDAMENTALS | FOURTH EDITION



SARAH R. LABENSKY | PRISCILLA MARTEL | EDDY VAN DAMME

Photographs by Richard Embery, Nick de la Torre and Eddy Van Damme

Drawings by Stacey Winters Quattrone and William E. Ingram



330 Hudson Street, NY, NY 10013

Director of Product Management: Linea Rowe
Product Manager: Derril Trakalo
Senior Analyst, HE Global Content Strategy: Tara Warrens
Analyst, HE Global Content Strategy: Bridget Daly
Manager Content HE, Careers & Professional: Jenifer Niles
VP, Production and Digital Studio: Paul Deluca
Digital Producer: Allison Longley
Content Producer: Rinki Kaur
Managing Producer, Teacher Education (TED)/Careers: Autumn Benson

Manager, Rights & Permission, Higher Education: Jenell Forschler
Cover Art: Eddy Van Damme
Cover Designer: John Christiana
Full-Service Project Management: Kelly Ricci
Composition: iEnergizer Aptara®, Ltd.
Printer/Binder: LSC Communications
Cover Printer: Phoenix Color Corporation
Text Font: ITC Garamond Std Light, 10.5/12

Copyright © 2020, 2016, 2013 by Pearson Education, Inc. 221 River Street, Hoboken, NJ 07030. All rights reserved. Manufactured in the United States of America. This publication is protected by Copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permissions, request forms, and the appropriate contacts within the Pearson Education Global Rights and Permissions department, please visit www.pearsoned.com/permissions/

Acknowledgments of third-party content appear in the Credits section on pages 830–834.

PEARSON and ALWAYS LEARNING are exclusive trademarks owned by Pearson Education, Inc. or its affiliates in the U.S. and/or other countries.

Unless otherwise indicated herein, any third-party trademarks, logos, or icons that may appear in this work are the property of their respective owners, and any references to third party trademarks, logos, icons, or other trade dress are for demonstrative or descriptive purposes only. Such references are not intended to imply any sponsorship, endorsement, authorization, or promotion of Pearson's products by the owners of such marks, or any relationship between the owner and Pearson Education, Inc., authors, licensees, or distributors.

CIP data is on file at the Library of Congress



About the Authors



SARAH R. LABENSKY

Chef Sarah is a culinary educator with an extensive background as an academic administrator, restaurateur, caterer and advocate for culinary professionalism. She is currently a chef-instructor for Oceania Cruises. From 2014 to 2019, Chef Sarah was a professor at Woosong University's Sol International Culinary Arts School in Daejeon, Korea. She was also Founding Director of the Culinary Arts Institute at Mississippi University for Women and a professor of culinary arts at Scottsdale (Arizona) Community College. While in Mississippi, Chef Sarah owned two restaurants and worked as food and beverage director for a country club. Before teaching, Chef Sarah spent many years as a pastry cook and caterer.

In addition to *On Baking*, Chef Sarah is coauthor of *On Cooking*; *The Prentice Hall Dictionary of Culinary Arts* and *Applied Math for Food Service*. She holds a J.D. from Vanderbilt University, is a past president of the International Association of Culinary Professionals (IACP) and is a charter member of the Southern Foodways Alliance. Chef Sarah's passions include travel and mentoring young people along their own professional paths.



PRISCILLA MARTEL

Chef Priscilla is a professional chef, educator and food writer with a special interest in almonds, Mediterranean cuisines and artisan baking. She honed her cooking skills at Restaurant du Village, a country French restaurant she opened in Chester, Connecticut, in 1979. Today she operates All About Food, which holds several baking patents and collaborates with food manufacturers and restaurants to create innovative products, menus and marketing programs.

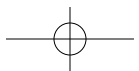
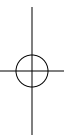
Chef Priscilla is a visiting instructor at Boston University's certificate program in the culinary arts and in the Hospitality Management Program at Gateway Community College in New Haven, Connecticut. She is also a contributing writer for *Gourmet Retailer* among other food trade publications. To honor her commitment to help young people prepare for their culinary careers, Chef Priscilla advises Pro Start Culinary teams in Connecticut. She is coauthor of *On Cooking: A Textbook of Culinary Fundamentals* (Pearson, 6th edition, 2019) and *Math for Bakers* (DVD).



EDDY VAN DAMME

Chef Eddy Van Damme, born in Belgium, studied Baking and Patisserie in Belgium and France. As a teenager he wanted nothing more than to come to America, which he loves and where he has made his home. He is a passionate baking professor at Houston Community College, where he inspires students to reach their maximum potential. Chef Eddy constantly researches, innovates and perfects recipes. He has won numerous competitions and awards and holds five ACF Gold medals. He travels at least twice a year to Europe to remain current in the latest patisserie trends. He creates recipes for Imperial Sugar, Dixie Crystals and other companies.

Chef Eddy has been featured on American and European television shows. When asked what his favorite baking subject is, he answers "The entire bakery/patisserie/confectionery field is extraordinarily spectacular to me and I deeply treasure it all". Currently he is developing allergen-free and nutrition-enhanced bakery goods.



Contents

PART ONE PROFESSIONALISM AND THE BAKESHOP

1 Professionalism and Food Safety _____ 1

BAKERS, CHEFS AND RESTAURANTS 2

- Bread Making Since Ancient Times 2
- Refined Sugar and the Art of Confectionery 3
- The Birth of the Bakery and Restaurant 4
- The Late 19th Century—Escoffier and *Cuisine Classique* 5
- The Mid-20th Century—Point and *Nouvelle Cuisine* 5
- The Return to Craftsmanship and the Artisan Bread Movement 6
- The Late 20th and Early 21st Century—An American Culinary Revolution 6

BAKESHOP OPERATIONS 9

- Baking Business Segments 9
- Bakeshop and Pastry Kitchen Organization and Staffing 9

THE PROFESSIONAL PASTRY CHEF AND BAKER 10

- Knowledge 10
- Skill 11
- Taste 11
- Judgment 11
- Dedication 12
- Professional Ethics 12
- Pride 12
- Careers 13

SAFETY AND SANITATION 13

- Safe Food-Handling Practices 13
- Preventing Cross-Contamination 14
- Cleaning and Sanitizing 16
- Food Storage and Labeling 17
- Controlling Pests 18
- Food Allergies and Intolerances 18
- Ensuring Employee Safety 19

2 Tools and Equipment for the Bakeshop _____ 21

STANDARDS FOR TOOLS AND EQUIPMENT 22

KNIVES 23

- Knife Construction 23
- Knife Shapes 23

HAND TOOLS 24

- Graters 25
- Pastry Brushes 25
- Rolling Pins 25
- Baker's Peels 25
- Cutters 25

MEASURING AND PORTIONING DEVICES 26

- Scales 26
- Volume Measures 27
- Ladles 27
- Portion Scoops 27
- Thermometers and Gauges 27
- Timers 28

STRAINERS AND SIEVES 28

COOKWARE AND BAKEWARE 29

- Materials and Heat Conduction 29
- Common Cookware 31
- Common Bakeware 31

DECORATING AND FINISHING TOOLS 33

PROCESSING EQUIPMENT 33

- Slicers 34
- Mandoline 34
- Food Processors 34
- Blenders 34
- Immersion Blenders 34
- Juicers 34
- Whipping Siphon 35

WORK SURFACES, STORAGE AND ORGANIZATION 35

- Storage Containers 35
- Racks 35

MIXING AND DOUGH HANDLING 36

- Mixers 36
- Automated Make-Up Equipment 36
- Sheeters 37
- Proof Boxes 37
- Retarders 37

BAKING AND COOKING 37

- Ovens 37
- Wood-Burning Ovens 38
- Microwave Ovens 39
- Cook Stoves 39
- Broilers, Salamanders and Propane Torches 39
- Deep-Fat Fryers 39

REFRIGERATION AND CLEANING 40

- Refrigerators and Freezers 40
- Ice Cream Freezers 40
- Dishwashers 41

SAFETY EQUIPMENT 41

- Fire Extinguishers 41
- Ventilation Systems 42
- First-Aid Kits 42

WORK STATIONS IN THE PROFESSIONAL BAKESHOP 42

- Measuring and Mixing Work Station 42
- Dough Make-Up Work Station 43
- Baking Work Station 43
- Assembly Work Station 43
- Other Important Areas in the Bakeshop 43
- Maximizing Flow in the Bakeshop 43

3 Bakeshop Ingredients _____ 45

FLOURS 46

- Wheat Flour 46
- Types of Wheat Flour 50
- Specialty Flours and Meals 51
- Purchasing and Storing Flour 52

SUGAR AND SWEETENERS 52

- Sugar 52
- Liquid Sweeteners 54
- Sugar Syrups 55

xvi CONTENTS

FATS 58

- Butter 58
- Lard 59
- Margarine 59
- Shortenings and Oils 59

MILK AND DAIRY PRODUCTS 60

- Milk Processing Techniques 60
- Concentrated Milks 61
- Cream 62
- Cultured Dairy Products 63
- Cheese 64

EGGS 65

- Egg Composition 65
- Egg Grading 66
- Egg Storage 66
- Egg Sanitation 67
- Egg Products 67
- Whipped Egg Whites 67

THICKENERS 68

- Starches 68
- Gelatin 69
- Vegetable Gums 71

FRUITS 71

- Berries 72
- Citrus 73
- Specialty Fruits 76
- Melons 78
- Pomes 79
- Stone Fruits 81
- Tropical Fruits 83
- Purchasing Fresh Fruits 86
- Preserving Fruits 87
- Juicing Fruits 88

FLAVORINGS 89

- Salt 89
- Emulsions and Extracts 89
- Vanilla 89
- Chocolate 90
- Coffee and Tea 90
- Herbs and Spices 91
- Nuts 94
- Alcoholic Beverages 96

4 Mise En Place 99**FORMULAS AND RECIPES 100**

- Standardized Formulas 100
- Working with Formulas 100
- Production Planning 101

MEASURING INGREDIENTS 101

- Measurement Formats 101
- Scaling Ingredients 103
- Measurement Systems 104
- Converting Grams and Ounces 104
- Temperature Measurements 105

CONVERTING FORMULAS 106

- Converting Total Yield 107
- Converting Portion Size 107
- Additional Conversion Challenges 108
- Baker's Percentage 109
- Yield Percentage 112

KNIFE SKILLS 112

- Using Knives Safely 113
- Caring For and Sharpening Your Knives 113

PREPARING EQUIPMENT 113**PREPARING INGREDIENTS 114**

- Ensuring Ingredients Are at the Proper Temperature 114
- Making Bread, Cake or Cookie Crumbs 114
- Clarifying Butter 115
- Toasting Nuts and Spices 115
- Blanching Nuts 115
- Preparing Nut Flour 116
- Flavoring Ingredients 116
- Steeping 116
- Conditioning 117
- Blanching and Parboiling 117
- Making an Ice Bath 117
- Making a Hot-Water Bath 117

5 Principles of Baking 119**MIXING METHODS AND TECHNIQUES 120**

- The Importance of Gluten 120
- The Importance of Moisture 121

HEAT TRANSFER AND THE SCIENCE OF BAKING 122

- Conduction 122
- Convection 123
- Radiation 123

BAKING AND COOKING METHODS 124**THE BAKING PROCESS AND THE STAGES OF BAKING 124**

- Fats Melt 125
- Gases Form 125
- Gases Are Trapped 126
- Microorganisms Are Killed 126
- Starches Gelatinize 126
- Proteins Coagulate 127
- Water Evaporates and Gases Escape 127
- Sugars Caramelize 127
- Carryover Baking Occurs 128
- Staling Begins 128

FLAVOR AND TASTE 128

- Tastes: Sweet, Sour, Salty, Bitter and Umami 129
- The Trigeminal Effect 130
- Texture and Mouthfeel 130
- Perception of Flavors 131

FLAVORING FOOD IN THE BAKESHOP 132

- Describing Aromas and Flavors in Food 132
- Bakeshop Flavor Combinations 133

PART TWO BREADS**6 Quick Breads** 135**CHEMICAL LEAVENING AGENTS 136**

- Baking Soda 136
- Baking Powder 137
- Baking Ammonia 137
- Purchasing and Storing Chemical Leavening Agents 137

MIXING METHODS FOR QUICK BREADS 138

- Biscuit Method 138
- Muffin Method 140
- Creaming Method 144
- Storing Quick Breads 145
- Troubleshooting Quick Breads 146

GRIDDLECAKES 146

7 Basic Yeast Breads 167**YEAST** 168

- Temperature, Moisture and Salt 168
- Types of Yeast 169

PRODUCTION STAGES FOR YEAST BREADS 171

- Stage 1: Scaling the Ingredients 171
- Stage 2: Mixing and Kneading the Dough 172
- Stage 3: Fermenting the Dough 175
- Stage 4: Folding (Punching Down) the Dough 176
- Stage 5: Portioning the Dough 177
- Stage 6: Rounding the Portions 177
- Stage 7: Make-Up: Shaping the Portions 177
- Stage 8: Proofing the Products 180
- Stage 9: Baking the Products 181
- Stage 10: Cooling and Storing the Finished Products 183

PROCEDURE FOR PREPARING YEAST BREADS 183**QUALITIES OF BREAD** 186**8 Preferments and Natural Starters** 207**PREFERMENTS** 208

- Types of Preferments 208
- Ingredients for Preferments 209
- Mixing Dough with Preferments 209

NATURAL STARTERS 215

- Making a Natural Starter 215
- Mixing Bread Made with Natural Starters 218

FERMENTATION, MAKE-UP AND BAKING WITH PREFERMENTS AND NATURAL STARTERS 220**QUALITIES OF BREADS MADE USING PREFERMENTS AND NATURAL STARTER** 220**9 Enriched Yeast Breads** 239**ENRICHED YEAST DOUGH** 240

- Mixing Enriched Yeast Dough 241
- Make-Up: Shaping Enriched Yeast Dough 241
- Proofing Enriched Yeast Dough 243
- Baking Enriched Yeast Dough 243
- Cooling, Finishing and Storing Enriched Yeast Dough Products 243

PROCEDURES FOR PREPARING ENRICHED YEAST DOUGH 243

- Basic Sweet Dough or Bun Dough 245
- Brioche 247

DEEP-FRIED ENRICHED YEAST DOUGH AND SPECIALTY DOUGH PRODUCTS 250

- Fats for Deep-Frying 250
- Deep-Frying Enriched Dough Products 251
- Doughnuts 251

10 Laminated Doughs 277**PREPARING LAMINATED DOUGH** 278

- Preparing the Dough for Laminated Products 278
- Selecting and Preparing the Fat for Lamination 279
- Enclosing the Fat into the Base Dough 279

- Rolling and Folding the Dough to Develop Layers 280
- Shaping Laminated Dough for Baking 282

PUFF PASTRY 282

- Making and Folding Puff Pastry Dough 282
- Shaping Puff Pastry 285

YEAST-RAISED LAMINATED DOUGH 288

- Production Stages for Yeast-Raised Rolled-In Doughs 289
- Croissants 291
- Danish Pastry 294

PART THREE DESSERTS AND PASTRIES**11 Cookies and Brownies** 315**COOKIES** 316

- Mixing Methods for Cookies 316
- Make-Up Methods for Cookies 318
- Panning Cookies 322
- Baking Cookies 322
- Cookie Formula Balance 322
- Finishing Cookies 324
- Storing Cookies 327

BROWNIES 328

- Brownie Formulas 328
- Flavoring Brownies 329
- Storing Brownies 330

12 Pies and Tarts 371**PIE CRUSTS AND TART SHELLS** 372

- Flaky and Mealy Pie Doughs 372
- Sweet Tart Dough (Pâte Sucrée) and Shortbread Tart Dough (Pâte Sablée) 375
- Crumb Crusts 376
- Shaping Crusts 377
- Baking Pies and Crusts 381

FILLINGS FOR PIES AND TARTS 382

- Starches for Pies 382
- Cream Fillings 383
- Fruit Fillings 385
- Custard Fillings 388
- Chiffon Fillings 389

ASSEMBLING PIES AND TARTS 389**STORING PIES AND TARTS** 392**13 Pastry and Dessert Components** 421**ÉCLAIR PASTE** 422

- Preparing Éclair Paste 422
- Filling Éclairs 425
- Finishing Éclairs 425

MERINGUE 427

- Meringue Preparations 428
- Browning Meringue 432
- Nut Meringue Preparations 432
- Filling and Storing Baked Meringue 433

STRUDEL DOUGH 433**PHYLLO DOUGH** 436**CRÊPES** 437

14 Cakes 451**INGREDIENTS FOR CAKES** 452**MIXING METHODS FOR CAKES** 453

- High-Fat Cakes 454
- Whipped Egg Cakes 458

PANNING, BAKING AND COOLING CAKES 466

- Preparing Cake Pans 466
- Filling Cake Pans 466
- Baking Cakes 467
- Cooling Cakes 468

STORING CAKES 469**15 Icings and Cake Assembly** 479**PREPARING ICINGS** 480

- Buttercream 480
- Foam Icing 486
- Fudge Icing 486
- Fondant 486
- Glaze 488
- Royal Icing 489
- Ganache 490

ASSEMBLING AND DECORATING CAKES 492

- Assembling Cakes 492
- Simple Cake Decorating Techniques 494
- Piping Techniques 495
- Covering and Decorating a Cake with Rolled Fondant 501

SPECIALTY CAKES 503

- Specialty Cakes and Fillings 504
- Assembling Specialty Cakes 504
- Decorating Specialty Cakes 505
- Constructing Extreme Specialty Cakes 505

CUTTING AND PORTIONING CAKES 506**STORING ASSEMBLED CAKES** 508**16 Custards, Creams and Sauces** 517**CUSTARDS** 518

- Handling Eggs in Custards 518
- Stirred Custards 518
- Baked Custards 525
- Soufflés 531

CREAMS 533

- Crème Chantilly 533
- Bavarian Cream 534
- Chiffon 536
- Mousse 537

DESSERT SAUCES 542

- Fruit Purées 543
- Caramel Sauce 544
- Chocolate Syrup 544

17 Ice Cream and Frozen Desserts 571**CHURNED FROZEN DESSERTS** 572

- Ice Cream and Gelato 573
- Sorbet and Sherbet 576
- Serving Suggestions for Ice Cream and Sorbet 579
- Granita 580

STILL-FROZEN DESSERTS 582**FROZEN TORTES AND BOMBES** 583**18 Healthy Baking and Special Diets** 597**PRINCIPLES OF HEALTHY BAKING** 598

- Portion Size 598
- Ingredient Selection 599
- Developing and Modifying Formulas 599

ACCOMMODATING SPECIAL DIETS 600

- Low-Sodium Diets 600
- Low-Sugar Diets 600
- Low-Fat Diets 603
- Dairy-Free Diets 604
- Gluten-Free Diets 605
- Allergen-Free Diets 606
- Vegetarian and Vegan Diets 606
- Weight Loss Diets 607

COMMUNICATING WITH THE HEALTH CONSCIOUS CUSTOMER 607**PART FOUR ADVANCED PASTRY WORK****19 Tortes and Entremets** 633**TORTES AND ENTREMETS** 634

- Cakes for Tortes and Entremets 635
- Fillings for Tortes and Entremets 638

ASSEMBLING AND GARNISHING TORTES AND ENTREMETS 639

- Assembling Tortes and Entremets 639
- Garnishing Tortes and Entremets 641

PORTIONING TORTES AND ENTREMETS 642**STORING TORTES AND ENTREMETS** 642**20 Petits Fours** 657**PETIT FOUR VARIETIES** 658

- Fresh Petits Fours 659
- Iced Petits Fours 661
- Dry Petits Fours 663
- Glazed Fruit Petits Fours 666
- Petits Fours Prestige 666

SERVING PETITS FOURS 666**21 Chocolate** 681**CHOCOLATE PRODUCTION** 682

- Types of Chocolate 683
- Chocolate Labeling 686
- Storing Bulk Chocolate 686

MELTING AND TEMPERING CHOCOLATE 687

- Melting Chocolate 687
- Tempering Chocolate 688
- Handling Tempered Chocolate 691

CHOCOLATE DECORATIONS 691

- Tempered Chocolate Decorations 691
- Modeling Chocolate Decorations 698

CHOCOLATE CANDIES 701	
Dipped Chocolate Candies 701	
Molded Chocolates 704	
Storing Filled Chocolates and Chocolate Candies 707	
CHOCOLATE SHOWPIECES 707	
22 Plated Desserts _____ 723	
DESSERT SERVICE 724	
Serving Desserts 724	
Creating New Items for a Dessert Menu 725	
PRESENTATION TECHNIQUES FOR DESSERTS 726	
Choosing Plates 726	
Arranging Desserts on the Plate 726	
Composing Plated Desserts 728	
Garnishing Plated Desserts 731	
23 Sugar Work and Confections _____ 749	
SUGAR WORK 750	
Caramel 750	
Isomalt 754	
CONFECTIONS 755	
Nougatine 756	
Marzipan 758	
ADVANCED SUGAR WORK 761	
Pastillage 761	
Pulled and Blown Sugar 768	
Appendix I _____ 787	
Appendix II _____ 790	
Appendix III _____ 791	
Glossary _____ 795	
Bibliography and Recommended Reading _____ 807	
Recipe Index _____ 811	
Subject Index _____ 821	
Credits _____ 830	

Formulas

Formulas printed in **blue** can be prepared in a 2–3 hour class period.

3 Bakeshop Ingredients

Simple Syrup (Heavy)	56
Crème Fraîche	63

4 Mis En Place

Pan Coating	114
-------------	-----

6 Quick Breads

Country Biscuits	140
Basic Blueberry Muffins	142
Yogurt or Sour Cream Muffins	143
Pecan or Walnut Spice Muffins	143
Mango Coconut Muffins	143
Cranberry and Dried Apricot Muffins	143
Cherry Almond Muffins	143
Raspberry Lemon Muffins	143
Apple Beet Muffins	143
Sour Cream Muffins	144
Streusel Topping	145
Buttermilk Pancakes	147
Blueberry Pancakes	147
Apple Pecan Pancakes	147
Cream Scones	149
Savory Greek-Style Scones	149
Chocolate Cherry Scones	150
Cinnamon Orange Scones	150
Cranberry Sour Cream Scones	151
Shortcakes	152
Irish Wheaten Bread	152
Whole Grain Morning Glory Muffins	153
Bran Muffins with Raisins	153
Pumpkin Muffins	154
Sweet Potato Muffins	154
Cranberry and Chocolate Chip Pumpkin Muffins	154
Cocoa Pear Muffins	155
Corn Muffins	156
Southern-Style Cornbread	156
Jalapeño Cheddar Corn Muffins	156
Bacon Cheddar Corn Muffins	157
Hush Puppies (Deep-Fried Cornbread)	157
Orange Cranberry Bread	158
Zucchini Bread	158
Zucchini Muffins	159
Dark Gingerbread Cake	159
Lemon Poppy Seed Muffins	160
Apple Cranberry Sour Cream Muffins	161
Banana Bread	162
Chocolate Chip Banana Muffins	162
Strawberry Banana Muffins	162

Lemon Tea Bread	163
Sour Cream Coffeecake	164
Flour Tortillas	165
American-Style Waffles	166
Pecan Waffles	166
Whipped Honey, Orange Cardamom Butter	166
Blueberry Almond Butter	166

7 Basic Yeast Breads

Soft Yeast Dinner Rolls	184
Whole-Grain and Oat Dinner Rolls	184
White Sandwich Bread	189
Whole-Wheat Sandwich Bread	189
Cloverleaf Rolls	189
Pullman Loaves	190
Oatmeal Bread	191
Hamburger or Hot Dog Rolls	192
Potato Herb Rolls	193
Potato Herb Pull-Apart Loaf	193
Olive Herb Potato Rolls	193
Potato Cheddar Cheese Bread	194
Jalapeño Cheese Bread	195
Cheddar Bacon Bread	195
Kaiser or Vienna Rolls	196
French or Italian Bread	197
Nine-Grain Bread	198
Grissini (Dry Italian-Style Bread Sticks)	199
Plain Bagels	200
Long-Fermented Bagels	201
Tomato Basil Bagels	201
Cinnamon Raisin Bagels	201
Pita Bread	201
Focaccia (Roman Flatbread)	202
Garlic Focaccia	202
Blue Cheese and Red Onion Focaccia	202
Cherry Tomato and Basil Focaccia	202
Pizza Dough	203
Swiss Chard and Ricotta Calzone	204
Tarte Flambée (Alsatian Onion Tart)	205
Decorating Dough	206

8 Preferments and Natural Starters

Basic Old Dough	210
Carrot Bread with Herbs	211
Light Rye Bread	212
Basic Polish	214

Artisan Wheat Bread	214
Natural Starter (Chef)	217
Italian Country Sourdough Loaves	219
Traditional French Baguettes with Old Dough	222
Olive Bread	223
Fougasse with Olives	224
Plain Fougasse	224
Multigrain Oat Bread	225
Artisan Baguettes	226
Rye Bread	227
Country Rye Bread with Currants	227
Ciabatta	228
Black Olive Ciabatta	228
Artisan Sprouted-Wheat Loaves	229
Onion Walnut Bread	230
Pretzels	231
English Muffins	232
Naan (Indian-Style Flatbread)	233
Garlic Naan	233
Simple Natural Starter	234
Pain au Levain (Traditional French Sourdough Bread)	235
Pain au Levain with Nuts	235
Pain au Levain with Garlic and Herbs	235
Pain au Levain with Three Cheeses	235
Pain au Levain with Walnuts and Cranberries	235
Rustic Long-Fermented Sourdough Bread	236
Multigrain Sourdough Bread	238

9 Enriched Yeast Breads

Challah	244
Sweet Bun Dough	246
Quick Fermented Sweet Bun Dough	247
Cardamom Sweet Bun Dough	247
Brioche	248
Raisin Brioche	248
Savory Cheese and Herb Brioche	248
Yeast-Raised Doughnuts	252
Soft Yeast-Raised Doughnuts	253
Filled Doughnuts	253
Bismarcks	253
Cinnamon Swirl Raisin Bread	256
Jumbo Cinnamon Buns	257
Cream Cheese-Glazed Cinnamon Buns	257
Cinnamon Bun Coffeecake	257
Powdered Sugar Glaze	257

Pain De Mie (Sandwich Bread)	258
Milk Bread	259
Cinnamon Babka Twist Loaf	260
Sweet Dough Coffeecakes	261
Sugar-Glazed Coffeecakes	261
Hot Cross Buns	262
Bun Glaze	263
Pecan Sticky Buns	264
Conchas	265
Parisian Brioche	266
Kugelhkopf	267
Chocolate-Glazed Kugelhkopf	267
Rum Babas with Crème Chantilly	268
Stollen	269
Panettone	270
Bienenstich (Bee Sting Pastry)	271
Apple Fritters	272
Banana Fritters	272
Cake Doughnut Holes	273
Buñuelos (Mexican-Style Doughnuts)	274
Beignets (French-Style Doughnuts)	275
Belgian Waffles	276

10 Laminated Doughs

Puff Pastry	284
Croissants	292
Danish Pastry Dough	294
Cream Cheese Filling	299
Frangipane	299
Green Tea Frangipane	299
Chocolate Frangipane	299
Pistachio Frangipane	299
Almond Paste Filling	300
Pistachio Almond Paste Filling	300
Ricotta Cheese Filling	300
Thickened Cherries	301
Coconut Cream Filling	301
Pineapple Coconut Moons	301
Quick Puff Pastry	303
Apple Turnovers	304
Cherry Turnovers	304
Individual Puff Pastry Fruit Tarts	305
Gateau Pithiviers	305
Palmiers	306
Puff Pastry Fans	307
Cream-Filled Napoleons	308
Two-Toned Croissants	309
Cocoa-Colored Pain au Chocolate	309
Almond Orange Croissants	310
Chocolate Pistachio Croissants	310
Ham and Cheese Croissants	310
European Danish Dough	311
Cinnamon Rolls	312
Cinnamon Roll Paste	312
Custard Cherry Roll	313
Apricot Pistachio Pinwheels	313
Almond Raspberry Bear Claws	313
Kouign Amann (Breton Butter Cake)	314

11 Cookies and Brownies

Chocolate Chunk Cookies	317
Apricot Fruit Spread	326
Decorative Cookie Icing	327
Fudge Brownies	329
Blueberry Fruit Spread	331
Strawberry and Cranberry Fruit Spread	331
Cherry and Cranberry Fruit Spread	331
Oatmeal Cookies	332
Chocolate Chewies	332
Carrot Cake “Cookies”	333
Lime and Pineapple Coconut Macaroons	334
Chocolate Drizzled Coconut Macaroons	334
Coconut Raspberry Macaroons	334
Chocolate Coconut Macaroons	334
Snickerdoodles (Cinnamon Butter Cookies)	335
Checkerboard Cookies	336
Traditional Shortbread	337
Bergamot Shortbread	337
Pecan Shortbread	337
Green Tea Shortbread	338
Lemon and Black Sesame Shortbread	338
Black Currant Shortbread	338
Blueberry-Filled Ginger Cookies	339
Chewy Ginger Cookies	339
Cuccidati (Sicilian Fig Cookies)	340
Biscotti	341
Orange Biscotti	341
Anise Biscotti	341
Chocolate Biscotti	341
Oat Chocolate Chip Bar Cookies	342
Lemon or Lime Bars	342
Pecan Squares	343
Granola Bars	344
Whole Wheat and Oatmeal Crumble Bars	345
Alfajores (Dulce de Leche Cookies)	346
Mirror Cookies	347
Raspberry Streusel Squares	347
Luxemburgers	347
Almond Macaronnade	347
Sugar Cookies	348
Linzer Cookies	349
Salted Caramel Linzer Cookies	349
Gingerbread Cookies	350
Speculaas (Belgian Spice Cookies)	351
Speculaas Spices	351
Dijon Mustard Black Pepper Crackers	352
Whole-Wheat Crackers	352
Graham Crackers	353
Rugelach Cookies	354
Spritz Cookies	355
Citrus Spritz Cookies	355

Cinnamon Spritz Cookies	355
Chocolate Spritz Cookies	355
Amaretti	356
Whoopie Pies	357
Gingersnaps	358
Butter Cookies	358
Almond Horns	359
Peanut Butter Sandies	360
Swedish Yule Logs	361
Polvorones (Mexican Wedding Cookies)	361
Chinese-Style Almond Cookies	362
Tuile Batter (Tulipe Cookies)	363
Russian-Style Cigarette Cookies	363
Almond Tuiles	364
Coconut Tuiles	365
Chocolate Peanut Butter Brownies	366
Cream Cheese Sun-Dried Cherry Brownies	367
Cream Cheese Topping	368
Sun-Dried Cherry Jam	368
German Chocolate Layered Brownies	369
Blondies	370

12 Pies and Tarts

Basic Pie Dough	374
Sweet Tart Dough (Pâte Sucrée)	376
Basic Crumb Crust	377
Basic Cream Pie	384
Banana Cream Pie	385
Coconut Cream Pie I	385
Coconut Cream Pie II	385
Meringue-Topped Cream Pie	385
Apple-Cranberry Pie	386
Apple-Rhubarb Pie	386
Cherry Pie	387
Blueberry Pie with Lattice Crust	388
Pumpkin Pie	389
Fresh Fruit Tart	391
Shortbread Tart Dough (Pâte Sablée)	394
Coconut Shortbread Tart Dough (Pâte Sablée à la Noix de Coco)	395
Sweet Almond Tart Dough (Pâte Sucrée Aux Amandes)	396
Coconut Almond Tart Dough	396
Chocolate Tart Dough (Pâte Sucrée au Chocolat)	396
Pâte Brisée	397
Neutral Glaze	398
Lemon Meringue Pie	398
Chocolate Cream Pie	399
Meringue-Coated Chocolate Cream Pie	399
Peanut Butter Pie	400
Individual Fresh Strawberry Pies	401
Strawberry Rhubarb Pie	402
Blackberry Crumble	403
Summer Berry Cobbler	404

xxii FORMULAS

Baked Streusel for Crumble	404	Dried Apricot and Pistachio		Basic Fudge Icing	486
Peach Pie with Decorative Crust	405	Dacquoise	446	Cocoa Fudge Icing	486
Pear Hazelnut Crisp	406	Pistachio Dacquoise	446	Basic Poured Fondant	487
Freeform Apple Tarts	406	Chocolate or Macadamia Nut		Basic Rolled Fondant	488
Hand Pies	408	Dacquoise	446	Basic Sugar Glaze	489
Deep-Dish Apple Crumb Pie	409	Gluten-Free Dacquoise	446	Basic Chocolate Glaze	489
Pecan Pie	410	Lemon Dacquoise Cake	447	Royal Icing	490
Sweet Potato Pie	411	Phyllo Dough Apple Strudel	448	Silky Ganache Deluxe	491
Buttermilk Pie	411	Strawberry Basil Phyllo Napoleon	449	Cream Cheese Icing	509
Lemon or Lime Curd Tart	412	Phyllo Crisps	449	Reduced-Fat Cream	
Key Lime Pie	414	Crêpes Suzette	450	Cheese Icing	509
Lime Mango Tartlets	414			French Mousseline Buttercream	509
Strawberry Cream Tartlets	415	14 Cakes		Chocolate Mousseline	
Black and Blueberry Tartlets	415	Poundcake	456	Buttercream	509
French-Style Apple Tart	416	Chocolate Poundcake	456	Fondant Glaze	510
Tarte Bourdalou (Pear		French-Style Fruitcake	456	Orange Fondant Glaze	510
Frangipane Tart)	416	Two-Stage Yellow Butter Cake	457	Raspberry Fondant Glaze	510
Apricot Tart	416	Spice Cake	457	Caramel Nut Filling or Icing	510
Linzer Tart	417	Classic Genoise	460	German Chocolate Cake	511
Chocolate Peanut Butter Tart	418	Chocolate Genoise	460	Coconut Pecan Icing	511
French-Style Onion Tart	418	Classic Spongecake	462	Carrot Cake	512
Rustic Vegetable Galettes	419	Chocolate Spongecake	462	Devil's Food Layer Cake	513
Quiche Lorraine	420	Angel Food Cake	464	Tres Leches Cake	514
		Chocolate Angel Food Cake	464	Coconut Lemon Cake	515
		Lemon Angel Food Cake	464	Mocha Torte	516
13 Pastry and Dessert		Orange Chiffon Cake	465	Candied Almonds	516
Components		Lemon Chiffon Cake	465	Candied Pecans or Walnuts	516
Éclair Paste (Pâte à Choux)	424	Gluten-Free Orange Chiffon			
Smooth Surface Éclairs	425	Cake	465	16 Custards, Creams	
Chocolate Éclairs	426	Yellow Cake	471	and Sauces	
Coffee Cream-Filled Éclairs	426	Chocolate and Almond Flour Cake	472	Vanilla Custard Sauce	520
Raspberry Cream-Filled Éclairs	427	White Chocolate Chunk Flourless		Chocolate Custard Sauce	520
Éclair Glaze	427	Chocolate Cake	472	Coffee Custard Sauce	520
Common (French) Meringue	429	Pistachio or Hazelnut Flourless		Earl Grey Custard Sauce	520
Chocolate Meringue	429	Chocolate Cake	472	Frangelico Custard Sauce	520
Coffee Meringue	429	Marble Cake	473	Ginger Custard Sauce	520
Lemon or Orange Meringue	429	Devil's Food Cake	474	Pistachio Custard Sauce	520
Coconut Meringue	429	Sticky Toffee Pudding	475	Saffron Custard Sauce	520
Almond Meringue	429	Almond Genoise	476	Pastry Cream	522
Meringue Drops and Sticks	429	Pistachio Almond Genoise	476	Chocolate Pastry Cream	522
Swiss Meringue	430	Vanilla Spongecake	476	Coffee Pastry Cream	522
Italian Meringue	432	Swiss Jelly Roll	477	Coconut Pastry Cream	522
Apple Strudel	434	Pistachio Spongecake	477	Mousseline Pastry Cream	522
Baklava Pastries	436	Ladyfingers	477	White Chocolate Mousseline	
Crêpes	438	Ladyfinger Bands	477	Pastry Cream	522
Savory Crêpes	438	Matcha Ladyfingers	477	Chocolate Buttercream	
Profiteroles with Chocolate Sauce	440	Chocolate Lava Cakes	478	Filling	522
Paris-Brest	440			Lemon or Lime Curd	524
Paris-Brest Cream	441	15 Icings and Cake Assembly		Orange Bergamot Curd	524
Individual St. Honoré Pastries	441	Simple Buttercream	482	Passion Fruit Curd	524
Streusel-Topped Cream Puff Shells	442	Light Chocolate Buttercream	482	Champagne Sabayon	525
Churros (Fluted Mexican		Lemon or Orange Buttercream	482	Toffee Caramel Flan	526
Doughnuts)	442	Peanut Buttercream	482	Baked Crème Brûlée	528
Fruit Meringue Decorations	443	Italian Buttercream	483	Chocolate Crème Brûlée	528
Merveilleux Pastries	444	Chocolate Italian Buttercream	483	Hazelnut Crème Brûlée	528
Rochers (Meringue Cookies)	444	Lemon Italian Buttercream	483	Lavender Crème Brûlée	528
Chocolate-Dipped Rochers	445	Coffee Italian Buttercream	483	Red Wine Crème Brûlée	528
Chocolate Nib Rochers	445	Traditional French Buttercream	484	Lactose-Free Crème Brûlée	528
Mocha Rochers	445	Mocha French Buttercream	484	New York Cheesecake	530
Individual Pavlova	445	Citrus French Buttercream	484	Grand Marnier Soufflé	532
Dacquoise	446	White Chocolate Buttercream	484	Coffee Soufflé	532
Nougatine Dacquoise	446				

xxiv FORMULAS

Brownies (Gluten-Free)	620	Palomo Entremet	652	Faun (Hazelnut Ganache	
Apple Pie (Gluten-Free)	621	Bergamot Entremet	653	Chocolates)	719
Pie Dough (Gluten-Free)	621	Empress Torte	654	Ceylon (Milk Chocolate and Cinnamon	
Italian Cream Cake (Gluten-Free)	622	Tiramisu Torte	655	Ganache Chocolates)	719
Almond Milk (Vegan)	623	Mascarpone Chocolate Raspberry		Passion (White Chocolate and	
Nut Milk Creamer	623	Dome Cake	656	Passion Fruit Ganache	
Vanilla Cake (Lactose-Free, Vegan)	624			Chocolates)	720
Aquafaba Italian Meringue (Vegan)	625	20 Petits Fours		Baho (Ginger, Lime and Caramel	
Pie or Tart Dough (Vegan)	626	Lemon Tartlets	660	Cream-Filled Chocolates)	720
Lime or Lemon Tartlets (Vegan)	626	Iced Raspberry Petits Fours	662	Caravelle (Marzipan, Raspberry	
Pumpkin or Sweet Potato Pie		Raspberry Petits Fours	662	and Hazelnut Chocolates)	721
(Vegan)	627	French Almond Macarons	664	Pona (Orange Cream-Filled	
Fruit-Flavored Pastry Cream		Chocolate Macarons	665	Chocolates)	722
(Vegan)	627	Apricot Passion Fruit Ganache			
Chocolate Mousse with Mango Coulis		Tartlets	668	22 Plated Desserts	
(Vegan)	628	San Diegos	669	Candied Citrus Peel	737
Coconut-Milk Chocolate Cream		Valencias	669	Chocolate Coconut “Dirt”	737
(Vegan)	628	Opéra Cake	670	Toasted Coconut Curls	738
Coconut-Milk Chocolate Cream with		Langues de Chat (Cat’s Tongue		Fruit “Pearls”	738
Raspberry Coulis and Vanilla		Cookies)	671	Lemon Lace Cookies	739
Cake (Vegan)	629	Lemon Sandwich Cookies	671	Raspberry Lace Cookies	739
Hazelnut Streusel (Vegan)	629	Bokkenpootjes (Dutch Goat’s		Pistachio Ice Cream Filled	
Chocolate Hazelnut Streusel		Feet Cookies)	672	Profiteroles	740
(Vegan)	629	Madeleines	673	Brownie with Orange Marshmallow	
Maple Cashew Ice Cream (Vegan)	630	Cherry-Almond Florentines	674	and Mandarin Sorbet	741
Maple Cashew Ice Cream with		Chocolate Pecan Cakes	675	Lime Banana Verrine	741
Salted Pecans	630	Financiers	676	White Chocolate Mousse on	
Chocolate Raspberry Torte		Stroopwafels (Caramel-Filled		Rhubarb with Strawberry	
(Vegan)	631	Waffles)	677	Ice Cream	742
Raspberry Ganache	632	Crêpes Dentelles (Lacy Crêpe Cookies)	677	Warm Rhubarb in Orange	
		Cocoa Nib Tuiles	678	Syrup	742
19 Tortes and Entremets		Chocolate Raspberry Mousse Bites	679	Domed Cheesecake with Pineapple	
Joconde Cake	636	White Chocolate Mousse Bites	680	Skewer and Mango Sorbet	743
Fruit and Nut Joconde Cake	636	21 Chocolate		Cheesecake Domes	743
Patterned Joconde Cake	637	Dark Modeling Chocolate	699	Lemon-Lime Mousse with Black	
Patterned Joconde Cake with		White Modeling Chocolate	699	Currant Sorbet	744
Cocoa Décor Paste	637	Dark Chocolate Truffles	703	Deconstructed Black Forest Cake	744
Raspberry or Mango Gelée	638	Chocolate Flower and Pillar		Cheesecake with Black Currant	
Apricot, Black Currant,		Showpiece	708	Sorbet	745
Blueberry or Peach Gelée	638	Cocoa Butter Modeling Chocolate	711	Flambéed Pineapple in Crêpes with	
Almond Biscuit	643	White Modeling Chocolate		Blackberry Sorbet	746
Almond Biscuit with Hazelnuts	643	Made with Corn Syrup	711	Palmiers with Baked Nectarines,	
Pistachio Biscuit	643	Gianduja	712	Peach Sorbet and Champagne	
Strawberry Gelée	644	Mendiant (Bittersweet Chocolate,		Sabayon	747
Cherry Gelée	644	Nut and Dried Fruit Disks)	713	S’mores on a Plate	747
Cocoa Gelée	644	Ruby Chocolate Mendiants	713	Chocolate Mousse with Strawberry	
Chocolate Mirror Glaze	645	Palets d’Or (Bittersweet and Vanilla		Sorbet	748
Milk Chocolate Mirror Glaze	645	Chocolates)	714	23 Sugar Work and Confections	
White Chocolate Mirror Glaze	645	Irish Cream (Chocolate, Coffee		Caramel	751
Bûche de Noël (Yule Log)	646	and Whiskey Ganache Squares)	714	Decorating Caramel	752
Mocha Rum Yule Log	646	Vioni (Milk Chocolate and Vanilla		Isomalt Lace	755
Passion Fruit Yule Log	646	Squares)	715	Basic Nougatine	757
Meringue Mushrooms	647	Rochers (Caramel, Almond and		Hazelnut or Walnut Nougatine	757
Sacher Torte	647	Orange Chocolates)	716	Cocoa Nougatine	757
Nobilis Torte	648	Hazelnut Crisps	716	Sesame Seed Nougatine	757
Hazelnut and Cherry Meringue		Nougatine Slivers	717	Coffee Nougatine	757
Cake	648	Chocolate, Fruit and Nut Bars	717	Marzipan	758
Mango Mascarpone Torte	649	Noble (Raspberry Ganache		Marzipan Pear	760
Rio Torte	650	Chocolates)	718	Marzipan Happy Pig	761
Coconut Macadamia Cake	650				
Fraisier (French-Style Strawberry Cake)	651				

Pastillage	762	Assembling Pulled and Blown		Tua-Tad (Thai-Style Peanut-Sesame	
Matisse-Inspired Showpiece	764	Sugar Flower	775	Brittle)	780
Showpiece Tube Supports	765	Caramel-Dipped Fruits	776	Pecan Pralines	781
Showpiece Base	766	Sugar-Based Nougatine	777	Marshmallows	782
Showpiece Philodendron Leaves	766	Hazelnut or Walnut Nougatine	777	Flavored Marshmallows	782
Hibiscus-Style Flowers	767	Coffee Nougatine	777	Raspberry Pâte de Fruit	783
Showpiece Assembly	767	Nougatine Cups	777	Gum Paste	784
Basic Pulled and Blown Sugar	770	Nougat Montélimar	778	Green Marzipan Bombe	785
Making the Pulled Sugar Flower Petals	773	Caramel Candies	779	Marzipan Flowers	785
Making the Blown Sugar Sphere		Peanut Brittle	780	Pastillage Calla Lilies	786
(Core of the Flower)	774	Hazelnut Brittle	780		

Preface

On Baking: A Textbook of Baking and Pastry Fundamentals builds on the successful approach developed in *On Cooking: A Textbook of Culinary Fundamentals*. This is a carefully designed text intended to teach both the principles and practices of baking and the pastry arts. The baking information presented in *On Cooking* is suitable for culinary students seeking a general knowledge of baking. *On Baking* takes the same clear, organized approach and expands the material into far greater depth, covering techniques and formulas required for core and advanced baking and pastry programs.

This text aims to teach professional culinary students core baking principles and the skills necessary to produce a wide array of baked goods, desserts and confections. Our goal is not merely to offer a collection of recipes or formulas, although there are over 750 formulas and variations for a wide variety of baked goods and confections. We include these formulas to illustrate the techniques presented in the teaching sections of each chapter. Throughout the text, we discuss both the “how” and “why” of baking. Extensive step-by-step photographs help illustrate techniques used to, for example, form bread dough, shape cookies or temper chocolate, while complete formulas present the baking principles and procedures. Throughout the text we provide extensive illustrated sections identifying bakeshop ingredients and equipment. We believe that a thorough understanding of the function of ingredients will serve you well throughout your baking career.

Winner of the 2004 **Gourmand World Cookbook Award as the “Best Book for Food Professionals in the World,”** *On Baking* has been uniformly praised for its organization, clarity, ease of use and use of quality photography to illustrate professional techniques. This fourth edition seeks to further enhance the content included in prior editions.



THE STORY BEHIND THIS UPDATE

Much of the feedback received since *On Baking* was first published indicates that students and instructors appreciate a text with clear, thorough explanations of fundamental techniques used in professional bakeries. Users also look for an assortment of formulas for making classic pastries and items served at modern bakery cafés as well as dishes that reflect an interest in plant-based cooking and wider cultural influences. We have edited this text to improve readability for today’s student and to align procedures, formulas and photos more closely. New and revised formulas speak to current trends. New photographs clearly illustrate baking procedures and techniques. Because pastry and baking programs vary in content and depth, we incorporated material appropriate for a range of skill levels and interests. Expanded coverage of advanced yeast bread, confectionary and pastry work addresses the needs of a variety of pastry and baking programs.

A NOTE ON RECIPES AND FORMULAS

The featured formulas, as recipes are called in the bakeshop, are designed to reinforce and demonstrate techniques presented within each chapter. Many of these formulas intentionally produce smaller yields, which are more appropriate for students beginning to learn about baking and for small schools and teaching kitchens. Professional bakeshops prefer to measure ingredients by weight, so volume measurements are used only when the quantity of an ingredient is difficult to weigh without specialized equipment: less than ½ ounce (30 grams) of salt, leavening or spices, for example. All ingredients are listed in both **U.S.** and **metric measurements** with the metric equivalents rounded to even, easily measured units when possible.

It is important to understand that the U.S. and metric quantities of ingredients are actually separate formulas; do not measure some ingredients in the metric amounts and other ingredients in the U.S. amounts, or the ratios will not be accurate and the intended result will not be achieved. We provide **yields** in either total batch weight or total yield and offer suggested portion sizes where appropriate.

Baker's percentages are included with many formulas, especially those for breads and flour-based products. Widely used in the professional bakeshop, baker's percentages are very useful for increasing or decreasing yields as needed.

We present detailed procedures for standard techniques, then generally do not repeat them in each formula (for example, "apply egg wash" or "divide the dough"). A **mise en place** feature is included with formulas that appear in the front section of formula chapters. Ingredients that require preparation before beginning to assemble the formula are listed in the margin. Consult this brief checklist after you read the formula but before you begin to bake. No matter how detailed the written formula, however, we must assume that you possess certain knowledge, skills and judgment.

Variations appear at the end of selected formulas. These variations enable you to see how a set of techniques or procedures can be used to prepare different dishes or new flavors with only minor modifications. Variations also provide the advanced baker or pastry chef the opportunity to customize formulas for different applications. **Headnotes** that describe the cultural or historical background of a bread or pastry or the unique techniques used in its preparation appear with many of the formulas. This short text should enhance your understanding of a baking style or technique.

Baking instructions are based on the use of a conventional oven. If a convection oven is used instead, you may need to reduce the temperatures by 25–50°F (15–30°C) from those recommended in the recipes. Watch the baking time as well because convection ovens can cook as much as 20 percent faster than conventional ovens.

A registered dietitian analyzed each formula using nutritional analysis software that incorporates data from the U.S. Department of Agriculture, research laboratories and food manufacturers. The **nutrient information** provided here should be used only as a reference, however. A margin of error of approximately 20 percent can be expected because of natural variations in ingredients. Preparation techniques and serving sizes may also significantly alter the values of many nutrients. In the nutritional analysis for a formula that offers a choice of ingredients, the first-mentioned ingredient is the one used unless stated otherwise. Ingredients listed as "as needed" are omitted from the analysis. Corn oil, whole milk, unsalted butter and table salt are used throughout for "vegetable oil," "milk," "butter" and "salt," respectively. In cases of a range of ingredient quantities or numbers of servings, the average was used.

Throughout this text the Good Choice symbol highlights formulas that are particularly low in calories, fat, saturated fat or sodium; if appropriate, these formulas may also be a good source of vitamins, protein, fiber or calcium. Gluten-free, vegetarian and vegan formulas found in Chapter 18, Healthy Baking and Special Diets, are indicated with the symbols shown here.

 **Good Choice**

 **Gluten Free**

 **Vegetarian**

 **Vegan**

Bakeshop products are often challenging to produce from start to finish in a single two- to three-hour class session. Formulas that can be produced in a limited amount of time are printed in blue in the master formula list on pages xx through xxv. If a dough, pastry or frozen component must rest or chill overnight before it can be used, that formula

xxviii PREFACE

will not be highlighted even if the final preparation can be made quickly. Should components such as tart dough or puff pastry be readily available, more of the formulas in this text may be prepared in a two- to three-hour class. As in restaurant and bakery settings, however, many breads and pastries will need to be made in stages. For example, puff pastry can be produced one day, then refrigerated for baking and assembly on a later day. This reinforces the component approach to pastry preparation, in which fillings, doughs, toppings, icings and such can be prepared in advance and assembled in various ways to complete desserts and pastries. Similarly, starters for yeast breads, doughs and fillings for Danish pastries and many dessert sauces can be prepared days in advance of final use.

Baking is both an art and a science. It is best learned through hands-on experience combined with study of the principles that underlie each technique. As a student, you should rely on the knowledge and skills of your instructor for guidance. Although some skills and an understanding of theory can be acquired through reading and study, no book can substitute for repeated, hands-on preparation and observations. We hope you enjoy *On Baking!*

Acknowledgments

This book would not have been possible without the assistance and support of many people. Special thanks go to photographers Richard Embery and Nick de la Torre for their talent, professionalism and commitment to quality; to Eddy Van Damme for his artistry with both recipes and photographs; and to Pierre Edouard Banry for his skills with sugar work and photography. The nutritional analysis was prepared by Mindy Hermann, MBA, RD, whose thoroughness and prompt replies were greatly appreciated. Thanks also go to Stacey Winters Quattrone, Bill Ingram and Anna Moreno for their artistry. We are grateful to the many chefs, restaurateurs, writers and culinary professionals who provided formulas and essays for this text. We extend our special thanks to the baking and pastry professionals who took time out of their busy schedules to contribute to this edition. Among them: Will Goldfarb, En-Ming Hsu, Miranda Loveless, Emily Luchetti, Alex Miles, Craig Nielsen, Morgan Winkelmann and Tina Powers, CEC CEPC CMB.

Sarah offers her sincere thanks and appreciation to her co-authors for adding their expertise, insight and artistry to this edition. Many thanks go to Eddy for both his contemporary, accessible formulas and his professionalism behind the camera lens. Sarah is especially grateful to Priscilla for her friendship as well as her many contributions to this project, including her ability to organize and synthesize mountains of information and express a clear vision for the text.

Eddy would like to thank his parents for gently guiding him into the amazing field of baking, Patricia for being the best sister anyone could ask for and Kyle for being the greatest. He would like to sincerely thank Chancellor Cesar Maldonado, PHD, PE, PMP; President Muddassir Siddiqi, EdD, PMP, CPLP; and Dean Suzette Brimmer for their relentless support, dedication and vision of excellence for the Pastry Arts, Culinary Arts and other programs at Houston Community College. Eddy feels honored to be part of the college and thanks the entire H.C.C. family and truly talented team of culinary and pastry professors. He also would like to thank Hyuna Lee, Quynh Luu Ha and the Imperial Sugar Company for their friendship and generous support to the H.C.C. Pastry Arts Program. Thanks also go to Kimberley O'Quinn with Storyteller Communications for her friendship and pushing his creativity. Eddy is immensely thankful and thrilled to be working with Priscilla and Sarah.

Priscilla would like to recognize the personal and professional support of Victor Frumolt, Harbinder Mann, Jacques Pépin, Carole Pierce, J. Patrick Truhn, Sylvia Barnes and James Trimble with this project. She would also like to thank Michael Laiskonis, Creative Director ICE; Miriam Madrigal, Marketing Manager, Callebaut; Warren Patterson, General Mills; Sara Saltiel, Marketing Coordinator, NSF International; Bill Weekley, CMB, General Mills; and William "Bill" Yosses, former White House Executive Pastry Chef, for their professional help with this project. She wishes to thank her co-authors and friends, Sarah and Eddy. Without Sarah's keen eye for details and Eddy's vast knowledge and artistry, *On Baking* wouldn't be possible. And thanks go to Charlie van Over for always keeping the wood oven stoked.

The authors wish to thank Houston Community College, Houston, TX, for the use of its kitchens.

Finally we wish to thank everyone involved in this project at Pearson Education, including Pamela Chirls, former Portfolio Manager for Culinary; Jenifer Niles, Manager Content HE, Careers & Professional; Rinki Kaur, Content Producer; Rachele Strober, Product Marketing Coordinator; Tara Warrens, Senior Content Analyst Trades, Culinary, & Hospitality; Erin Mulligan, Developmental Editor; John Christiana for his award-winning design skills and patience during our color selections; and Kelly Ricci and her team at Aptara.

We also remain indebted to Robin Baliszewski, Acquisitions Editor of the first edition of *On Cooking* and current Managing Director for Higher Education Sales at Pearson, for her support and friendship.

xxx ACKNOWLEDGMENTS

We would like to offer our sincere thanks to the following chefs and instructors who took the time to provide their detailed feedback on the content in our text book over the four editions.

Leslie Bartosh CEC, FMP Alvin Community College
Dorothy Chen-Maynard, California State University
San Bernardino
Elizabeth Dickson, Bossier Parish Community College
Debbie Foster, Ball State University
Wendy Gordon, Rockland Community College
Jeff Hamblin, Brigham Young University–Idaho
Robert Hansen, Bob Jones University
James Haynes, Glendale Community College

Dorothy Johnston, SUNY-Erie
Cynthia Kruth, Naugatuck Valley Community College
Joseph LaVilla, College of Marin
Marilyn Lowers, Cape Fear Community College
Allan Okuda, Hawai'i Community College
Virginia Olson CWPC, CHE, Anne Arundel Community College
Anthony Pisacano, Ogeechee Technical College
Cindy Schwanke, College of the Canyons
Armando Trujillo, Pima Community College