



2nd Edition

Kitchen Essentials and Basic Food Preparation

KITCHEN ESSENTIALS AND BASIC FOOD PREPARATION

2ND EDITION



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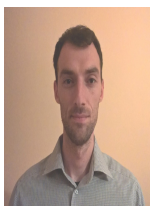
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HOW TO USE THE BOOK

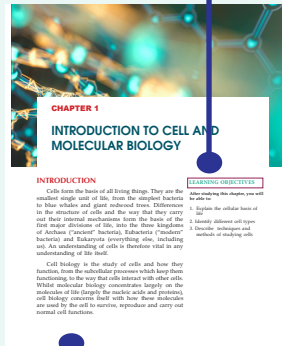
This book has been divided into many chapters. Chapter gives the motivation for this book and the use of templates. The text is presented in the simplest language. Each paragraph has been arranged under a suitable heading for easy retention of concept. Keywords are the words that academics use to reveal the internal structure of an author's reasoning. Review questions at the end of each chapter ask students to review or explain the concepts. References provides the reader an additional source through which he/she can obtain more information regarding the topic.

LEARNING OBJECTIVES

See what you are going to cover and what you should already know at the start of each chapter

ABOUT THIS CHAPTER

An introduction is a beginning of section which states the purpose and goals of the topics which are discussed in the chapter. It also starts the topics in brief.



The expertise, value and judgement of the product or service you have developed. Finding a good business name is more difficult than ever. Many of the best names have already been trademarked. But with shrewdness and creativity on the one, a good name is crucial to creating a memorable business image. In short, the name you choose can make or break your business.



There's a lot of controversy over what makes a good business name. Some experts believe that the best names are abstract, a blank slate upon which to create an image. Others think that names should be informative so customers have immediately what they're buying. Some believe that initial names (names that come from initials) are more memorable than names that are not words. Others think that most initial names are forgettable. In reality, any name can be effective if it's backed by an appropriate marketing strategy.

Given all the considerations that go into a good company name, should you consult an expert, especially if you are in a field in which your company name will be visible and may influence the success of your business? And if so, it's important to be the help of a naming professional?

No, just as an accountant will do a better job with your taxes and an agent will do a better job with your real estate, a naming firm will be more adept at naming your business than you will. Naming firms have extensive resources for naming new names, and they know that they may exceed the trademark laws. They have the expertise to advise you against bad name choices and explain why others are good. A naming consultant will take the tedious task of your hands—and do a job that will be for you in the process.

Start by deciding what you want your name to communicate. To be most effective, your company name should contain the key elements of your business. Now work in developing a niche and a mission statement will help you prepare the domain.

REMEMBER

This revitalizes a must read information of the topic.

KEYWORDS

This section contains some important definitions that are discussed in the chapter. A keyword is an index entry that identifies a specific record or document. It also gives the extra information to the reader and an easy way to remember the word definition.

Secondary sources derive from the transformation of primary energy sources. For example, plants that derive from the treatment of crude oil and electrical energy, obtained from the conversion of mechanical energy (hydroelectric plants, nuclear plants), chemical plants (pharmaceuticals), or nuclear (nuclear plants). Electric energy is produced by electric plants, i.e. nuclear installations that can transform primary energy into transformed into electric energy.

1.1.2 Commercial Energy and Non-Commercial Energy

Commercial Energy

The energy sources that are available in the market for a definite price are known as commercial energy. By far the most important forms of commercial energy are electricity and oil and refined petroleum products. Commercial energy forms the basis of industrial, agricultural, transport and commercial development in the modern world. In the industrialized countries, commercial energy is the predominant source not only for economic production, but also for many household tasks of general population.

Examples: Electricity, lignite, coal, oil, natural gas etc.

Non-Commercial Energy

The energy sources that are not available in the commercial market for a price are classified as non-commercial energy. Non-commercial energy sources include fuels such as biomass, cattle dung and agricultural wastes, which are traditionally gathered, and not brought to a price used especially in rural households. These are also called traditional fuels. Non-commercial energy is often ignored in energy accounting.

Example: Firewood, agro waste in rural areas, solar energy for water heating, electricity generation, for drying goods, fish and fruits, animal power for transport, drinking, lifting water for irrigation, crushing sugarcane, wind energy for lifting water and electricity generation.

all with different boiling points. So, to process the oil for a specific application, the crude must be heated to a specific temperature range.

Distillation

Distillation is a very heavy, fluid metal (2-20) that can be used to lift oil to a higher chain reaction, producing tremendous quantities of heat which can then be used to generate electricity. Because the reaction of one molecule replacing another reaction sets off another 2-3 reactions, the resulting chain reaction is exponential and allows us to generate a substantial amount of heat with a relatively small amount of reaction. After activation, uranium must be processed before we can start the fusion process. Most nuclear power stations that have been built around the world are designed to contain fissionable which is then converted to pellets of uranium dioxide. While nuclear power often is a greenhouse gas-intensive source of energy, the resources associated with nuclear fission and long-term storage of spent fuel present significant barriers to widespread adoption.

1.1.4 Work and Heat

Heat and work are two different ways of transferring energy from one system to another. The distinction between Heat and Work is important in the field of thermodynamics. Heat is the transfer of thermal energy between systems, while work is the transfer of mechanical energy between two systems. This distinction between the macroscopic motion (heat) and microscopic motion (work) is crucial to how thermodynamic processes work. Heat can be transformed into work, and vice versa (mechanical equivalent of heat), but they are not the same thing.

Heat and work are both measured in energy units, so they must both represent energy. How do they differ from each other, and from past plans "energy" itself? In our daily language, we often say that "this object contains a lot of heat", but this is ambiguous in thermodynamics terms, although it is ok to say that the object is "hot", indicating that its temperature

DID YOU KNOW?

This section equip readers the interesting facts and figures of the topic.

EXAMPLE

The book cabinets’ examples to illustrate specific ideas in each chapter.

Patent

Trademark and copyright differences can get murky, so let's first review the purpose and use of a patent. When you hear the word "patent," you should think invention - everything from Pencil it makes to animal toe protection.

Copyright

Artists, authors, and other creative work out copyrights for their work. A copyright covers physical works of art, music recordings of any kind, written works, and performance arts. The length of a copyright lasts for the lifetime of the author plus 70 years. While a copyright technically is created as soon as you create a piece of intellectual property, without some form of proof, it's very difficult enforce that protection in federal court. You also don't need to have the signature (S) with your name and year created on all of your materials, but doing so could potentially help you with your case.

Trademark

Business and product owners use trademarks for names, logos, and symbols that identify commercial goods or services. While they protect the brand name of the goods, they do not protect the actual good or service from being replicated and sold under a different name.

McDonald's might trademark the name "Big Mac" but they don't trademark the food because their serving a beef patty and cheese sandwich on an English muffin and adding a ketchup.

This is where branding and marketing comes in. Your competitors might offer similar products, but your customers choose yours because of your recognizable brand and iconography.

How do you trademark a business name and logo?

To register a trademark in the U.S., you have to file an application with the United States Patent Trademark Office (USPTO), the federal agency that governs the enforceability of trademark.

EXAMPLE

DO YOU KNOW?

In 1842, Gerstn  how does a conservation law show the heat of reaction during chemical transformations. This law was later recognized as a consequence of the first law of thermodynamics.

But there's a catch: we can't explicitly conserve with the heat and work energy exchange by heat and work.

moving up and down once for each cycle. Hot high-pressure steam is admitted to the cylinder in the first half of each cycle, and then it is allowed to escape again in the second half. The overall effect is to take heat Q_1 generated by burning a fuel to make steam, convert part of it to do work, and release the remaining heat Q_2 to the environment at a lower temperature. The net heat energy absorbed is then $Q = Q_1 - Q_2$. Since the engine returns to its initial state, its internal energy U does not change ($\Delta U = 0$). Thus, by the first law of thermodynamics, the work done for each complete cycle must be $W = Q_1 - Q_2$. In other words, the work done for each complete cycle is just the difference between the heat Q_1 absorbed by the engine at a high temperature and the heat Q_2 exhausted at a lower temperature. The power of thermodynamics is that this conclusion is completely independent of the detailed working mechanism of the engine. It relies only on the overall conservation of energy with heat regarded as a form of energy.

In order to save money on fuel and avoid contaminating the environment with waste heat, engines are designed to maximize the conversion of absorbed heat Q_1 into useful work and to minimize the waste heat Q_2 . The Carnot efficiency (η) of an engine is defined as the ratio $W/Q_1 = \eta$, the fraction of Q_1 that is converted into work. Since $W = Q_1 - Q_2$, the efficiency also can be expressed in the form

$$\eta = (Q_1 - Q_2)/Q_1 = 1 - Q_2/Q_1 \quad (2)$$

If there were no waste heat at all, then $Q_2 = 0$ and $\eta = 1$, corresponding to 100 percent efficiency. While reducing friction in an engine decreases waste heat, it can never be eliminated; therefore, there is a limit on how small Q_2 can be and thus on how large the efficiency can be. This limitation is a fundamental law of nature -- no heat, second law of thermodynamics.

Isothermal and adiabatic processes

Because heat engines may go through a complex sequence of steps, a useful way to think about them is to use the principles of thermodynamics. In particular, consider a gas that expands and contracts within a cylinder with a movable

ROLE MODEL

A biography of someone who has/had acquired remarkable success in their respective field as Role Models are important because they give us the ability to imagine our future selves.

ROLE MODEL

PAUL V. MOOKAPETRIS: AMERICAN COMPUTER SCIENTIST AND INTERNET PIONEER, INVENTED THE INTERNET DOMAIN

Paul Mookapetris was born on 18 November, 1948 in Boston, Massachusetts. He received BS degrees in Physics and Electrical Engineering from MIT in 1971, and a PhD in Information and Computer Science from the University of California, Irvine in 1982.

Paul's earliest professional work was while he was an MIT student in an early multiprocessor operating system for the Architects Machine Group; virtual machine operating systems for IBM; and simulation work at Draper Labs.

At UC Irvine for his PhD, Paul worked on the Distributed Computer System where he built one of the earliest ring LAN hardware systems and matching network operating system.

At USC's Information Science Institute, Paul started as a research assistant and eventually headed the Communications Division. During this time Paul's research included work on many of the fundamental internet protocols, including development of the first SMTP server, and later the invention of the Domain Name System, and deployment of early root servers and DNS operations. The DNS is an essential part of all web and email addresses and essentially every application on the internet.

Paul has been active in internet community service, spending 3 years as program manager for networking at ARPA, and 2 years as IETF chair, as well as numerous other roles.

In 1995, Paul left academia, and took leadership roles at startups including cable internet at @Home, email at Software.com/Openwave, integrated SONET and IP products at Fibertek/CorvusData.

At present, he is Chairman and Chief Scientist at Nominum, when he has returned to his interest in DNS, advancing naming and directory systems for the internet. He also serves and advises and board member for various other startups. Paul continues to believe that the internet's future is about of it.

Paul is a member of the ACM and IEEE.

EXAMPLE

CASE STUDY

GLOBAL BUSINESS SERVICES COMPANY

Company owns a corporate domain portfolio of several hundred domains. A large, incumbent corporate registrar provided their domain management and registry services. Company also used several third-party registrars from legacy relationships acquired over the years by IT, digital marketing and as a result of M&A activity.

Business Challenges

In 2016, Company domain management stakeholders in IT and marketing experienced a number of challenges managing their domain assets. With multiple service vendors, their domain management costs were excessive and several vendors presented control and management problems. Internal processes for ordering, managing and tracking domains were inefficient, requiring manual steps and administrative workarounds. Domain asset management and support was dependent upon time-consuming staff processes combined with external professional services.

The rapid expansion of generic top-level domains (gTLDs) made it apparent to Company leadership that domain management was becoming more complex and total cost of ownership was increasing, in part due to having multiple vendors. Company also recognized that slow, manual and non-integrated domain management processes were impeding business objectives such as brand innovation and customer digital experience.

They determined to find a solution that would offer:

- Vendor consolidation for greater operational efficiency;
- Cost reduction (internal and vendor cost);
- Enhanced business intelligence (to gain competitive advantage in the market.)

Solution and Outcomes

Company's brand and IT management decided to consolidate their domain portfolio on a single, integrated digital asset management platform that would meet the needs of internal stakeholders: digital marketing, brand management, IT, finance, and IP legal (intellectual property) teams. Company selected Authentic Web Inc. including turnkey project management service to consolidate disparate domain name services to a single platform.

EXAMPLE

MULTIPLE CHOICE QUESTIONS

This is given to the students for progress check at the end of each chapter.

MULTIPLE CHOICE QUESTIONS

- A full domain name is a sequence of labels separated by _____.
a. semicolons
b. dots
c. colons
d. none of the above
- A _____ server loads all information from the primary server.
a. primary
b. secondary
c. none of the above
- The first level in the generic domain section allows _____ possible labels.
a. 10
b. 12
c. 16
d. none of the above
- If a label is not terminated by a null string, it is called a _____.
a. domain
b. PQDN
c. SQDN
d. none of the above
- What a server is responsible for or has authority over is called a _____.
a. domain
b. label
c. zone
d. none of the above
- DNS can use the services of _____ using the well-known port 53.
a. UDP
b. TCP
c. either (a) or (b)
d. none of the above

EXAMPLE

REVIEW QUESTIONS

- What exactly is a domain name?
- How to choose a domain name for business? Explain.
- Discuss how to register a domain name? What will it cost?
- What's the difference between my domain name and web hosting?
- What is the best way to secure a domain name?
- Which domain is best for business?

Answer to Multiple Choice Questions

1. (b)	2. (b)	3. (d)	4. (a)	5. (c)
6. (c)	7. (a)	8. (c)	9. (b)	10. (c)

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EXAMPLE

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TABLE OF CONTENTS



Preface	xv
Chapter 1 Basics of Kitchen	1
Introduction	1
Kitchen Essentials	2
Kitchen Organization	3
Basic Elements of Kitchen Operations	6
Formats Dictate Kitchen Operations	11
Outlets of Kitchen Triangle	13
Restaurant Kitchen Planning	14
Commercial Kitchen	16
What should anyone look for when renting a commercial kitchen or commissary?	17
What Makes a Commercial Kitchen?	18
Kitchen Staff Duties and Responsibilities	19
Design a Small Commercial Kitchen	21
Commercial Restaurant Kitchen Equipment Checklist	23
Basic Layout of a Commercial Kitchen	25
Kitchen Tools And Equipment	28
Heavy and Light Kitchen Equipment	29
Introduction to Quantity Kitchen Equipment	30
Cooking Equipment	31
Processing Kitchen Equipment	35
Holding and storage kitchen equipment	35
Measuring devices	38
Knives, Hand Tools, and Small Kitchen Equipment	39
Care and maintenance	43
Summary	49
Multiple Choice Questions	50
Review Questions	51
References	52



Chapter 2 Existences of Food Preparation 55

Introduction	55
Food Preparation Techniques	56
Methods of Frying	58
Need of Microwaving	61
Food Baking Techniques	62
Basting	65
Broiling Cooking Process	68
Fermentation	69
Smoking	71
Roasting	74
Scientific Methods Of Food Preparation And Sanitation	76
Cooking Procedures	78
Food Preparation Skills	79
Cuisine Preparation	81
Ways to Meal Preparation	82
Changes in Food during Preparation-Color, Texture and Flavor	85
Chef Role and Responsibilities	88
Maintain Workplace Sanitation	89
Summary	97
Multiple Choice Questions	98
Review Questions	99
References	100

Chapter 3 Kitchen and Food Service Area 103



Introduction	103
Food And Beverage Service Areas	104
Components of Restaurant Kitchen Layouts	107
Workflow Structures within the Food and Beverage Service Location	108
Work Environment	111
Food and Beverage Servicer	112
Communication in Kitchen and Services Area	115
Members Of Food Service Area	118
Food and Beverage Manager	118
Restaurant Manager	120
Room Service Manager	121
Bar Manager	122
Banquet Manager	124
Other Staff Designations at Various Levels	127

Serving Dishes and Utensils	128
Clean And Clear Food Service Areas	130
Service Equipment/Utensils and Supplies	132
Glassware	132
Chinaware	137
Tableware	139
Tables and Chairs	141
Trolleys	141
Dessert Trolley	142
Summary	144
Multiple Choice Questions	145
Review Questions	146
References	147

Chapter 4 Cooking Techniques 149

Introduction	149
Cooking Techniques: Recipes And Ingredients	150
Cooking Techniques Everyone Should Know	150
Cooking by Moist Heat	153
Cooking by Dry Heat	156
Losses Of Nutrients During Cooking	165
Do's and Don'ts for Retention of Nutrients	167
Nutritional Effects of Food Processing	169
Enhancing Nutritive Value of Food Items	172
Tips to Maximize Nutrient Retention during Cooking	174
Best way to Cook Vegetables to maximize their Nutritional Value	174
Preserve nutrients while cooking vegetables	177
Cook Food without Losing Nutrients	182
Summary	190
Multiple Choice Questions	191
Review Questions	192
References	193

Chapter 5 Use of Garnishing 195

Introduction	195
Purpose Of Garnishing Food	196
Garnishing Techniques	199
Types of Garnishes for Food	204
Prepare Good Garnishes	205
Garnish Food Methodology	210
Citrus Garnishing Ideas	213



Herb Garnishes	218
Demand In Food Garnishing	219
Accompaniment	220
Standardized Recipes	223
How Are Garnishes Chosen?	224
Dandelion use in Garnishing	225
Use Ice Water to Make Curls	228
Tame and Revive Strawberry and Tomato Tops	229
Substitute for Thyme in a Recipe	230
Summary	235
Multiple Choice Questions	236
Review Questions	237
References	238

Chapter 6 Salad and Dessert Preparation 241

Introduction	241
Selection Of Salad Ingredients	242
Shopping and Handling Techniques for Produce	243
Keep Salad Greens and Fresh	245
Salad Cream	249
Fruit Salad Preparation	251
Techniques for Fruit Preparation	255
Dressing a Fruit Salad	256
Basic Concept Of Desserts	257
Ingredients	258
Dessert Salad	259
Techniques of Plated Desserts	259
Varieties of Desserts	264
Frozen Desserts	269
Summary	277
Multiple Choice Questions	278
Review Questions	279
References	280

Chapter 7 Food Quality Assurance And Safety 283

Introduction	283
Food Safety, Quality And Consumer Protection	284
Food Quality and Food Safety Concern	286
Global Considerations	288
Responsibility for Food Quality and Food Safety	289
Distinction between Food Quality and Food Safety	290
Food Safety as Part of Food Quality	290



Food Laws And Regulations	291
Enforcement of Food Laws and Regulations	292
Quality Control Programs	292
Quality Assurance Systems	294
Develop A Food Safety Program	298
Food Safety Standards	299
Establishment	300
Food Safety Hazards	306
Chemical Hazards in Foods	308
Food Safety Hazards and Health Risk	311
Working in Temperatures that Promote the Rapid Growth of Micro-Organisms	312
Food Safety Program For Catering Enterprise	313
Critical Control Points	313
Standard Operational Policies and Procedures	317
Maintenance of Personal Hygiene and Suitable Dress Standards	319
Contingency Plans	319
Implement the Food Safety Plan	320
Draw a Flow Diagram	321
HACCP Prerequisite Program Premises And Facilities	321
HACCP Prerequisite Program Sanitation and Cleaning	327
HACCP Prerequisite Program Equipment	330
Summary	333
Multiple Choice Questions	334
Review Questions	335
References	336

Chapter 8 Basic Food Preparation: Meats, Poultry, and Fish **339**



Introduction	339
Slicing Meats	341
Characteristics of Beef	341
Cuts of Beef	342
Preparing beef	343
Roasting Beef	343
Cooking Beef by other Dry-heat Methods	345
Suggestions for Control of Quality	345
Cooking Beef in Liquids	347
Preparing Veal	348

Cuts of Pork	349
Preparing Pork	350
Roasting Pork	350
Grilling Pork	351
Braising Pork	352
Cooking Pork in Water	352
Preparing Lamb	352
How To Cook Meat	352
Preparing the Meat for Cooking	353
Cooking Meat to the Proper Temperature	356
Roasting Meat in the Oven	357
Grilling Meat	359
Searing Meat in a Pan	361
How to Grill Meat	363
Ingredients	363
Fish	367
Preparing Finfish	367
Baking Finfish	368
Deep-Fat Frying Finfish	368
Pan Frying Fish	369
Preparing Canned Finfish	369
Preparing Shellfish	370
How To Cook Fish	371
Mastering the Cooking Basics	371
Different Types of Cooking	376
Trying Specific Recipes	380
Poultry	382
Preparing Chicken	382
Baking Chicken	383
Deep-Fat Frying Chicken	384
Cooking Chicken by Moist-Heat Methods	384
Preparing Canned Chicken	384
Preparing Turkey	385
Preparing Duck	385
How To Roast A Chicken	386
Ingredients	386
Making Simple Roasted Chicken	386
Trying Variations	390
How To Cook Chicken	393
Preparing the Chicken	394
Grilled Chicken	397
Baked Chicken	399

Sautéed Chicken	402
Summary	408
Multiple Choice Questions	409
Review Questions	410
References	411
Index	413

PREFACE

Kitchen equipment is a great help in maintaining the cleanliness or orderliness in the kitchen. Some of this equipment could help the cook chop, slice, and neatly mince raw ingredients. Cooking equipment specially made for such, and they are designed to be mess-free as well. Developments in the food and drink sector are critical for market distinction, but developments in the hospitality industry are also always at risk as they can be replicated quickly and imitated, which leads the establishment to further innovation and improvement of services. Standardization of the working procedures, handling the groceries, binds the usage of technological solutions that allow standardization during the work, which regulates the number of employees needed, energy consumption, lower waste, with increased hygiene and cleanliness of the working process and greater effectiveness and cost efficiency for the company itself.

In all restaurants and hotels where food is prepared, kitchen is the center of activity. It's called the hotel's heart. The purpose of a hotel or restaurant the kitchen organization is to prepare food. It is managed for the most efficient use of personnel, equipment and materials. The sector of hospitality is the service sector. One of the major departments in the hospitality facilities is the food and beverage department. Service quality of this department attracts people to facilities other than the purpose of the accommodation. Guests staying in hospitality facilities may be exposed to food poisoning if food does not comply with hygiene and sanitation rules. Therefore, cleaning in the kitchen is absolutely necessary.

Organization of the book

This edition contains eight chapters and text is revised and new topics are added. This book equips students with basic food preparation and management skills used in commercial and institutional food operations. The study areas will cover safety and sanitation, techniques for food preparation, terminology, equipment use and care, food costing, and standardized recipes. The book focuses on developing knowledge, skills, attitudes, and personal attributes that

lead to job success in entry-level or hospitality industry-specialized jobs. The principles presented in this book can be equally useful for both the student of management and the student of vocational course. Together, the principles and techniques introduced in this book can be useful for the hospitality worker/manager who intends to enhance his/her job skills and knowledge as well in this particular field.

Chapter 1 presents an overview of kitchen. You will know the kitchen essentials and the commercial kitchen. It will also explore about the kitchen tools and equipment.

Chapter 2 equips you with various food preparation techniques and the scientific methods of food preparation and sanitation.

In Chapter 3 you will know the food and beverage service areas. It will also shed light on clean and clear food service areas.

Chapter 4 presents a variety of methods and procedures for preparing, cooking and presenting food. Good techniques also take into account economical use of food and cooking fuel resources, as well as food safety.

Chapter 5 focuses on the some basic concepts and techniques of food garnishing. It also explores the demand of food garnishing.

In Chapter 6 you will know the salad and dessert preparation. Dessert is a course that consists of sweet foods and beverages, such as dessert wine or liqueurs, but may include coffee, cheeses, nuts, or other savory items.

Chapter 7 presents the food quality assurance and safety. Therefore, food quality and food safety principles and practices are applied to foods from farm produce and livestock production; manufactured and processed food products for consumers; and all raw materials, ingredients, processing aids, food-contact packaging materials, and food-contact surfaces that are used in the preparation of food and beverage products.

Chapter 8 focuses on preparation of meats, poultry, and fish. Meat, poultry and fish can be canned, frozen or dried. These home prepared products are tasty and safe when processed right. However, because meat, poultry and fish are low-acid foods that easily spoil special care is needed for preservation.



CHAPTER 1

BASICS OF KITCHEN

INTRODUCTION

The kitchen is the most prominent and enclosed section or area in which edible food ingredients are brought together, gathered, combined through proper processing and cooked by various means of cooking methods for consumption. In simple terms, a kitchen is an area set aside for preparation of meals. Small kitchen is referred by the term 'kitchenette'.

The kitchen is the hub and center of activities to produce food in any establishment or residential apartments. Chiefly concerned with food production activities, it is also associated with cleaning, storing, mise en place (washing, peeling, and cutting), cooking, holding food materials and dishes, plating, washing up, waste clearing, etc. The term 'kitchen' derives from the Latin term *cucina*, cook food, where *cook* derives from the Latin word *coquus* or *coquo* (meaning to cook, become ripe).

The world of kitchens has witnessed a huge change from its raw state to most refined kitchen outlet, since

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Find the kitchen essentials
2. Know about the commercial kitchen
3. Learn about the kitchen tools and equipment

the period of antiquity. It were the Romans who brought the tradition of creating and establishing kitchens in ancient times, which was followed by all across the globe. The kitchens at that time were octagonal in shape, with many provisions of fire places, no chimneys but with a turret at the top on the conical roof of the kitchen to allow the smoke go out of the kitchen.

The kitchens were located either near the toilets or caldariums (rooms containing warm water for bathing), or they were mere hearth for cooking in open fires. But with the passage of time, the invention of cooking ranges changed the dimension of the modern kitchen. Nowadays, the kitchen is given due attention in terms of location, layout, space, incorporation of technologies, and all other aspects. It is located strategically for easy, smooth and efficient functioning.

The renewal and upgradation of culinary arts have simultaneously upgraded and meliorated the way the kitchen was conceptualized. In modern times, the kitchen has been equipped with best amenities, state-of-the-art equipment and monitored by professional and adept kitchen professionals. Also, it is looked upon as laboratoire.

KITCHEN ESSENTIALS

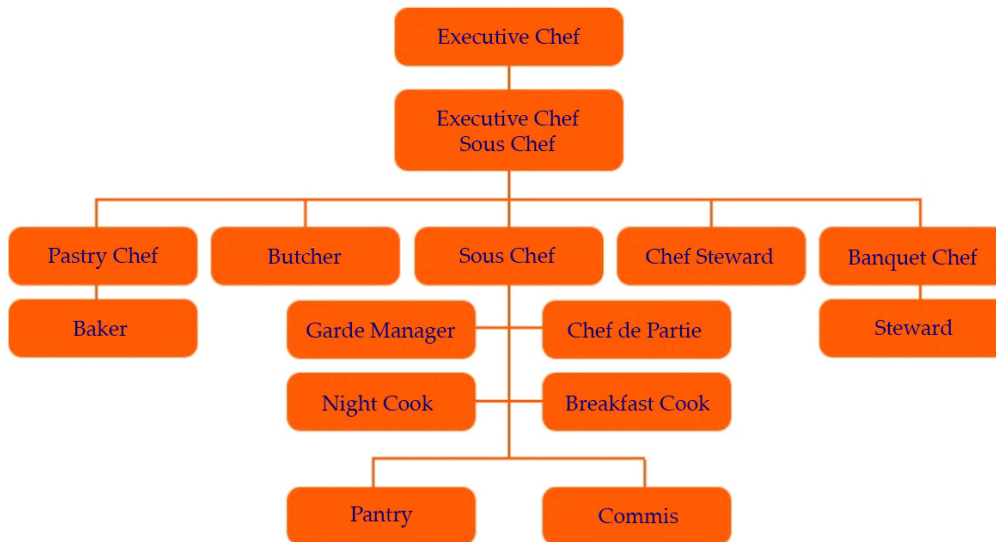
A kitchen is a room or part of a room used for cooking and food preparation in a dwelling or in a commercial establishment. A modern middle-class residential kitchen is typically equipped with a stove, a sink with hot and cold running water, a refrigerator, and worktops and kitchen cabinets arranged according to a modular design. Many households have a microwave oven, a dishwasher, and other electric appliances. The main functions of a kitchen are to store, prepare and cook food (and to complete related tasks such as dishwashing). The room or area may also be used for dining (or small meals such as breakfast), entertaining and laundry. The design and construction of kitchens is a huge market all over the world.

The kitchen is the place where food is prepared. In a hotel or in restaurant a spice room is used for food preparation and is known as kitchen, in outside catering it is a place assigned for food preparation like in trekking, rafting, etc. The word kitchen comes from the French word “Cousin”, which means art of cooking or food preparation in the kitchen. In modern hotel management cuisine refers to the art of cooking and style of service.

Kitchen is the central point of activities in all restaurants and hotels where food is prepared. It is the heart of hotel. A hotel is defined as a place where lodging and foods available, so kitchen is one of the most important unit as kitchen is related with food. The purpose of kitchen organization in a hotel or restaurant is to produce is managed for the most effective use of staff, equipment and materials. It is revenue earning unit. 50% of hotel's collection is from food.

Kitchen Organization

This is a typical kitchen organizational chart seen in hotel and restaurant operations. Some of the positions seen here may not apply in smaller scale operations, but understanding the organizational chart will allow you to create a system that best suits your type of establishment.



The kitchen is usually divided according to the following responsibilities:

- The kitchen or brigade de cuisine headed by the chef de cuisine or executive chef (in Asian kitchens, the head chef is called the chef or the chief cook).
- The sous chef who supervises menu preparation at the different stations under the chefs de partie.
- The pastry chef is in charge of baked goods such as bread and desserts. Under him is the baker. The pastry area or cold kitchen area is separate from the hot kitchen area.
- The butcher takes care of butchering requirements.
- The chief steward is in charge of the kitchen's cleanliness. Below him is the steward.
- The banquet chef heads banqueting and functions.
- The grade manager is in charge of cold food.
- The assistant chef or assistant cook prepares the menus at the different stations. This is also known as the commis.

Kitchen Essentials and Basic Food Preparation

- The person in charge of the pantry handles the dry goods and stored items, and the commis is an assistant chef working under the chef de partie.

Common kitchen equipment

Apart from knowing the roles of different persons in the kitchen, one should also be familiar with the different pieces of equipment used. In general, there are 3 broad types of equipment: storage, production, and cooking equipment.

1. Storage equipment

- **Chillers** – Where food items that do not require freezing are stored. Items that should be kept cold but not frozen include vegetables, because their quality will deteriorate.
- **Freezers** – An example of food items that are stored in freezers are frozen meats. This is important to prolonging the shelf life of the meat.
- **Warmer** – These are temporary storage equipment where finished products or dishes are stored until served.

2. Production equipment

- **Mixers** – For combining ingredients in large batches. Mixed ingredients are usually of the solid form. This can be for cake and pastry ingredients or ground meat mixes. Mixers come with different attachments depending on the use, such as the paddle attachment to mix ingredients, or whisk attachment to whip ingredients through incorporating air and making food fluffy. 2 types of mixers are the table top (smaller ones such as the KitchenAid) and floor (large industrial ones).
- **Slicers** – For slicing meats and baked products
- **Choppers** – One example is a food processor. This is used for chopping various ingredients into smaller pieces, such as vegetables.

These items help chefs prepare food faster, rather than doing things by hand.

3. Cooking equipment

- **Steam cooking** – These are steam kettles, steamers, combination cookers and microwave ovens. This type of equipment makes use of steam for cooking.
- **Dry heat** – Dry heat cooking equipment makes use of cooking methods without liquid or oil. Examples include ovens and stoves.
- **Grills** – Also use dry heat, but by exposing food to open flame.
- **Fryers** – Make use of oil for cooking. An example is a deep-fryer.

Aspects of kitchen layouts

There are two aspects of kitchen layouts. Before deciding on a suitable kitchen layout, you should also know what type of kitchen is needed. These kitchen types are classified in terms of special equipment, stations or logistics/transportation needs as follows:

- **Quick service restaurant.** Characterized by speed and high-volume activity
- **Hotel food service.** A huge kitchen that prepares high-volume banquet service, with satellite kitchens
- **Hospital kitchen.** Requires the highest standard of sanitation
- **Mid-scale restaurant.** Medium-sized, the size of a hotel kitchen station
- **In-flight food service kitchen.** Commissary-type; operates round the clock and usually located very near the airport
- **Cruise ship kitchen.** Has large storage units to keep enough food for the duration of the cruise

Kitchen layout flow

The layout should flow as such:

- Receiving and storage area should be close together
- Next to storage should be the mise en place and production area
- Once ready, food should move quickly to the plating and pick-up area near the dining room.

Criteria for a well-designed kitchen

The kitchen layout should be designed according to your menu to ensure the right equipment, workspaces and capacity are available. Consider these criteria and how they fit your restaurant concept and menu:

- Division of areas for proper distribution of labor
- Smooth traffic flow
- Sanitary and hygiene standards
- Equipment selection
- Determining capacity
- Purchasing system

Basic Elements of Kitchen Operations

Prep Production

Prep production is the unsung hero in the success of restaurants and catering companies. A well-designed prep plan ensures that the team succeeds in front of customers due to: Sufficient quantities of prepared ingredients on hand to fulfill customer orders. High quality of ingredient at the right temperature, consistency, thickness, saturation, shape, resiliency, etc.

It also helps the business to be more successful by:

- Reducing the number of staff required to be present at one time to execute service or events (which allows for use of smaller kitchen facilities, reduces overtime, etc.)
- Reducing the number of steps that need to be performed during service
- Enables menus including food that require time to cook, marinate, etc
- Consolidating work that needs to happen across multiple recipes (e.g., common ingredients)

Finishing

Keyword

Bottleneck is one process in a chain of processes, such that its limited capacity reduces the capacity of the whole chain.

Finishing is when the pressure is on! Customers may be standing right in front of you or their ticket may be on your board. The team's ability to finish multiple orders, group them together where necessary for parties, and deliver them with the right presentation and at the right temperature is often the difference between a rabid fan and a disappointed former patron.

Finishing quality adds the distinctive tastes, textures, and presentation that often helps clients to distinguish your food, and can literally be your "secret sauce".

However, finishing speed and equipment is often forgotten as a potential **bottleneck** for capacity as you scale or during peak service hours.

Packaging

Packaging is often given little thought, but a well-designed packaging step can have a large impact on:

- **Ingredient waste:** Things like locking in moisture for herbs/ vegetables, locking out moisture for breads and crackers, and reducing handling damage can dramatically improve the shelf life and yield of perishable goods. At another level, techniques like canning and cryovac can change the way ingredients are ordered
- **Perceived product quality:** Packaging's first function is to deliver the contents inside in appropriate condition. Anyone who has ordered takeout and opened a steaming package of soggy fries at home has seen a failure of the selected packaging to maintain a high quality product. Beyond issues impacting the quality of food,
- **Business margins:** Packaging is often a hidden expense for operations. Minimizing the use of unnecessary packaging, consolidating delivery platters where possible, using lower cost package formats for smaller orders, and other methods to reduce unnecessary cost with no value for the customer can uncover substantial hidden profits.

Staffing

Your team works to create your food. Ensuring you have enough people at the right times can be the difference between handling a busy night and having angry customers due to a backed up service. Labor laws dictate a number of requirements around paying staff that drive a number of important operations:

- **Time Tracking:** However your staff clocks in, keeping an accurate record of working time and breaks is important in addressing any labor questions or regulatory inquiries.
- **Overtime:** Overtime laws vary by states and country, so make sure you know the requirements in your area. Arranging your team and schedules to minimize overtime can significantly change labor costs, as each overtime hour can cost 50-100% or more extra over existing base wages + payroll taxes.
- **Payroll, Payroll Taxes, and Benefits:** Administering payroll to meet local laws, on time, and with appropriate taxes, wage garnishments, etc. can be challenging and often requires a 3rd party to ensure appropriate reporting.

Ordering

The variability of catering makes ordering a challenging job that can make a large

Kitchen Essentials and Basic Food Preparation

swing in the quality, efficiency, and profitability of the kitchen. Restaurants face a more consistent menu week to week and here the challenge is adjusting to take into account the existing inventories based on daily variation in the items ordered.

Strangely, unlike other industries, the ordering process today is largely one that still requires a phone call and the manual processing by an account rep, leaving room for communication and processing errors and taking a substantial amount of time of both the chef placing the order and the account rep.

Chefs approach ordering in 3 basic strategies today:

- **Pars:** Chefs will bring inventories up to “par” or a set number that indicates the top end of the desired inventory for that item. While a common practice that is easy to understand, it is at the heart of a lot of waste and extra activity that occurs in kitchens.

In our kitchen, moving away from par ordering and looking at ingredient consumption uncovered a significant shortage of eggs in pastry relative to amounts ordered. A quick investigation uncovered the 6 egg omelets of a chef on the morning shift who was on a new diet and exercise regimen. We never noticed while the par system was in effect.

- **Specials Driven:** Chefs will look at the order list for the day and the current inventory levels and the vendor driven specials and then guesstimate the things they think they need. They’ll put in place some specials that use up the excess ingredients they have, so that it those ingredients don’t spoil and go to waste. They’ll also leverage any vendor specials or farmer’s market ingredients to drive some special dishes of the day. This strategy often includes use of large wholesale quantities of items that can be obtained for a unit price discount.
- **Emergency Driven:** Chefs will often realize that they’re out of a couple of ingredients that they need right now...so someone will get sent to the local store to retrieve those ingredients
- **Just in Time:** Chefs will calculate the ingredients required for the day’s prep and finishing work and order so that those ingredients come in the right quantities to be consumed by that day’s work. It requires the most preparation and reliable supply chain. Its benefits are that it most reduces the chances for waste and enables the shortest cycle times/ highest capacity operations.

Receiving

The receiving step occurs when ordered ingredients are delivered to the kitchen. Ideally, the received ingredients are:

- immediately checked for accuracy against the order;
- examined for required levels of quality;
- moved to the appropriate kitchen station for immediate use or to store in inventory.

With any discrepancy, the supplier and the kitchen manager should both be notified, to ensure that appropriate resolution occurs to solve the issue with the supplier as well as enabling the kitchen manager as much time as possible to address the ingredient shortfall.

In kitchens where the order reconciliation isn't a given, emergency shops or over inventory of ingredients as buffer is the norm.

Storage

Storage areas hold a mix of food, equipment, and event supplies. While they can never be too organized, a non-functioning organization spends a disproportionate amount of time buying things they already have and running around looking for things.

In an effective kitchen, everything has its place and there is plenty of open space with appropriate containers allocated to hold ingredients needed for upcoming jobs. Items are arranged in a way that's easy to see, easy to access (if commonly used), and easy to move.

If possible, storage is nearest to where the item will be used (location and height), to reduce the distance traveled to reach it. Common storage areas include:

- Dry goods
- Walk-in refrigerators and freezers
- Undercounter or station refrigerators and freezers
- Equipment racks
- Under-table shelves
- Secured storage
- Warehouse storage
- Outdoor storage

Inventory

Keeping track of what's in inventory in a fast moving food business is a major challenge. Issues include:

- Perishable product/ spoilage
- Inconsistent physical space required for same product
- Lack of inventory controls
- Lack of systems to track items in use
- Shrinkage/ theft

Since it's hard to track inventory in the computer, in many organizations **spreadsheets**, white boards, and visual cues are used to keep a running count or approximate what's in stock.

Keyword

Spreadsheet is an interactive computer application for organization, analysis and storage of data in tabular form.

Maintenance/ Cleaning

A clean and well maintained kitchen is a key to passing health department requirements. Working clean is often the sign of an experienced prep chef. Daily cleaning of stations, floors, and restrooms is often a closing task. Regular interval deep cleans including drains, hoods, and hoses.

While cleaning is embedded in most kitchens, maintenance also needs to be scheduled regularly to ensure reliable equipment function.

In both cleaning and maintenance, the best kitchens assign these jobs to specific individuals and make them accountable for following through. Simple things like job descriptions and initialed checklists are often enough to do the trick.

Quality Control

Making sure the items that come out of the kitchen are up to specifications is the difference between consistently good reviews and feedback that pings between great and angry.

In many kitchens, it's up to a senior chef to review all food going out and make sure it's up to standard - taste, temperature, texture, look, smell. In better kitchens, there is often a strong cultural understanding of what the requirement is for any item going out, so that anyone is able to spot errors prior to food reaching the customer. In the best kitchens, errors are tracked and underlying issues of common errors are addressed so that the error is subsequently eliminated.

Formats Dictate Kitchen Operations

Kitchen operations tend to be varied in how they work. While they all share a goal of getting food to customers, the format and its related expectations can dramatically change the work required and therefore the operational approach of the kitchen.

- **Quick Service (QSR):** Food is generally ordered from a counter. Food types and quality may vary dramatically, but the overall customer expectations center around speed.
- **Buffet/ Cafeteria:** Food is generally prepared in larger batches and organized into stations. It may be selected directly by the customer onto their plate or their selection is finished quickly in front of them.
- **Casual Dining:** Diners experience table-service and food is ordered off a mid-priced menu. Generally, these restaurants have a fairly wide selection of items and moderately skilled chefs are able to execute the food on the menu.
- **Fine Dining:** Diners experience table-service and the expectations (and price point!) is substantially higher than the casual dining restaurant. Many items are made from scratch and significant chef skill may be required to execute the items on the menu.

Logistical additions to the above formats:

- **Delivery:** Delivery format may be available for any of the service models above, with the added complexity that the food must be packaged to survive the trip to its destination and arrive with some level of quality attributed to the appropriate temperature, presentation, and accompaniments.
- **Catering:** Catering format may be available for any of the service models above, with the added complexity of needing to prepare and setup food for a group of people in an outside location that may or may not have facilities, kitchen equipment, or tableware required to execute the job. All items sold must be designed with the requisite logistical complexities in mind.

Quick Service Restaurant (QSR)

Quick Service Restaurants include fast food and an emerging fast casual segment. The overall structure of the operation is driven by customers ordering at the counter with a quick turnaround of food.

- **Operational Priority:** QSR restaurants are driven by short wait times between an order being placed and the customer receiving food, even under high volumes. To accommodate, menus are often narrow, specialty equipment cuts preparation time, and stations are well stocked with pre-prepared items where possible.

Kitchen Essentials and Basic Food Preparation

- Pay Then Pickup model (e.g., Panera, McDonald's)
 - Food is ordered at a counter and inputted into a register or Point of Sale (POS) system
 - Customer is given an order number and waits near the counter or at a table
 - Ordering information is generated and communicated to the kitchen
 - Kitchen often has multiple stations, which are routed the specific food type relevant to the order
 - Stations are set up to quickly finish and assemble the
- Single Line model (e.g., Subway, Chipotle)
 - Initial order is given to the first person preparing food
 - Food is passed down the assembly line and various elements are added per customer request
 - Final food preparer packages the food
 - Order is rung up at a register
 - Customer pays for and receives food

Buffet/ Cafeteria

Buffets and cafeterias are characterized by arranging food in stations, providing a wide variety of different options, many arranged in a “self-serve” format.

The main differences between a buffet and a cafeteria (in the USA, anyway) can be summed up in a few short sentences:

- A buffet is all you can eat. You pay the cashier and then go select your food and go back for more food if you wish...no extra charge.
- A cafeteria is a line of different foods, usually with each item individually priced (not always, but often) or you are limited to certain selections unless you want to pay extra for additional items. You pay the cashier at the end of the line and then go eat the meal.
- A restaurant has a menu and you choose your meal from that offering. Some items are listed as a meal or a platter. Sometimes you have a choice of side dishes and sometimes not...it all depends on that establishment. You order

your meal and a server brings it to you. You pay the cashier (or sometimes you give the server the money) after eating the meal.

- Some buffets are also restaurants in that there is a menu you can order from - you don't get the buffet option of going back for more food though. With establishments such as this, you are getting food not offered on the buffet. You would place your order, pay the cashier and wait for your food to be brought to you by a server.

DID YOU KNOW

The concept of the kitchen work triangle was developed in the 1940s by the University of Illinois School of Architecture. It began as an attempt to standardize home construction. The goal was to show that by designing and building a kitchen with efficiency in mind, overall construction costs could be reduced.

Outlets of Kitchen Triangle

The goal of the kitchen triangle, the centerpiece of most kitchen layouts since the 1940s, is to create the best work area possible in this busiest of rooms.

Since the three most common work sites in the average kitchen are the cooktop or stove, the sink, and the refrigerator, the kitchen work triangle theory suggests that by placing these three areas in proximity to each other, the kitchen becomes more efficient.

If you place them too far away from each other, the theory goes, you waste a lot of steps while preparing a meal. If they are too close together, you end up with a cramped kitchen without adequate space to prepare and cook meals.

But the kitchen triangle concept has faded from favor in recent years, as it's become somewhat outdated. For instance, the kitchen triangle is based on the idea that one person prepares the entire meal, which isn't necessarily the case in 21st-century families.

Kitchen Work Triangle Basics

According to design principles, the classic kitchen triangle calls for:

- Each leg of the triangle to be between 4 and 9 feet
- The total of all three sides of the triangle to be between 12 and 26 feet

Kitchen Essentials and Basic Food Preparation

- No obstructions (cabinets, islands, etc.) should intersect a leg of the work triangle, and
- Household traffic should not flow through the work triangle.

In addition, there should be 4 to 7 feet between the refrigerator and sink, 4 to 6 feet between the sink and stove, and 4 to 9 feet between the stove and refrigerator.

Problems with the Kitchen Triangle

Not all homes, however, have a kitchen large enough to accommodate a triangle. Galley style kitchens, for instance, which place appliances and prep areas along a single wall or two walls parallel to each other, don't offer many angles at all.

And open concept kitchens which are popular with newer-style construction often don't require such uniform layout. In these kitchens, the design tends to focus less on a work triangle and more on kitchen work zones that may even spill over into the dining or living areas. One example of a work zone would be placing the dishwasher, sink, and trash can close to each other to make cleaning up easier.

Another problem with the kitchen work triangle, especially among design purists, is that it often violates the principles of Feng shui home design. The kitchen is one of the three most important rooms in the home as far as Feng shui is concerned, and a major no-no of Feng shui is positioning your oven so that the cook's back is to the door of the kitchen. The cook is considered vulnerable in this scenario, which does not lend itself to the harmonious atmosphere Feng shui seeks to create.

Restaurant Kitchen Planning

One of the biggest investments in opening a new restaurant is the kitchen. A commercial kitchen needs industrial-grade equipment that will withstand a busy restaurant schedule. The design and layout of a restaurant kitchen should allow food to flow seamlessly from the prep area to the line. Sometimes a new restaurant has a fabulous location, but a small kitchen space, and you have to adapt your plans accordingly.

The kitchen is the heart of your restaurant, where your menu comes to life. It's where food is prepared, cooked, and plated. It is also where the dirty dishes are brought, where food is stored and where all your utensils, dishes, and cooking equipment are housed. Unlike home, where it's just you and your family, a restaurant kitchen has dozens of people in and out of it on any given shift, so it's important to be organized. There's a place for everything and everything in its place. It not only saves time during the busy rushes, but it also helps keep the kitchen.

Know the Differences in Commercial Ovens and Ranges

Commercial ovens and ranges are specifically designed for high volume cooking. Though they are one of the most expensive pieces of equipment you'll buy, a good commercial range can last decades. The type of food on your restaurant menu will dictate what type of commercial range you'll need.

If you are going to feature several barbeque items on your menu, you will need a good size grill. If sauté dishes are a mainstay of the restaurant menu, then a six-burner commercial range is ideal.



Other things to consider with any kitchen stove, oven, or grills are the HVAC (Heating Ventilation Air Conditioning) system, which includes hoods and fire safety.

Consider Leased or Used Kitchen Equipment

Certain pieces of restaurant equipment are ideal for either leasing because they have a short lifespan or buying used because they have a long lifespan. Ice machines are ideal for a lease because they often don't last more than a few years, and once they break are expensive to repair. A commercial oven, as noted above, is ideal to buy used because it can last a long time.

Keep Costs Low in the Kitchen

Having a well-planned restaurant kitchen doesn't just keep the food flowing to the dining room—it can save you money in time and waste. If your staff knows where everything is located, understands the rule of FIFO (first in, first out) this will help reduce food waste and spoilage. It will also make prep and cooking times in the kitchen more efficient.

Keep the Restaurant Kitchen Clean

Nothing will ruin a restaurant's reputation faster than a case of food poisoning. A clean kitchen is essential for any restaurant.

Kitchen Essentials and Basic Food Preparation

A regular cleaning list will ensure that all staff knows what needs to be done during each shift. Setting aside scheduled time for bigger cleaning jobs each month will keep your kitchen safe for customers and staff. If your restaurant is open seven days a week, all year long, you should plan two to three days during a slow season to close and do a thorough cleaning of the entire establishment.

Many cleaning jobs can be outsourced to other companies, including hood cleaning, kitchen mats, and uniforms. It's also important that staff be held accountable for the cleaning tasks, whether they be daily, monthly, or yearly.

The kitchen is the heart of any restaurant. Without a functional commercial kitchen, restaurant owners would be hard-pressed to provide excellent food in a timely manner for customers. Choosing the right equipment before you open is important, as it will impact your startup budget; restaurant owners should carefully weigh the pros and cons of used, leased, and new equipment. Keeping the kitchen stations well-stocked, clean, and organized is essential to successful day-to-day operations. Clear communication between management and staff can help operations run smoothly both in the kitchen and the dining room.

COMMERCIAL KITCHEN

Commercial kitchens and commissaries are commercial-grade facilities that are licensed for food service providers to prepare and store food. Food truck owners, bakers, independent chefs, and others use commercial kitchens or commissaries when upgrading their home kitchen for professional use is out of their budget, or if the city does not allow a chef to cook in a mobile food truck.

Depending upon your local city or county health department, you will need to store your food (and sometimes your truck) at a licensed facility. Commercial kitchens or commissaries often have equipment which can be leased out for a small fee.

Some commercial kitchens and commissaries are “shared space,” where several people may have access to the group kitchen. You will have to book your time slot when using a shared space kitchen.

Other “shared space” arrangements can also be made with a brick and mortar restaurant. A restaurant owner may rent out his kitchen during off hours. You can also find other certified commercial kitchen spaces with churches, public and private schools, hotels, retirement homes, and cooking schools.

What should anyone look for when renting a commercial kitchen or commissary?

The needs may vary depending upon what type of food business you have. For example, bakers may require large ovens which are regularly maintained. A personal chef who conducts private cooking classes may require a studio kitchen with large prep areas. A food truck owner may need a cleaning station or on-site truck maintenance service along with a secure space to store his or her truck.

Make a list of the specific requirements you need for your individual food business. Then, ask the following questions:

- What is the inspection history of this commercial kitchen or commissary?

If you notice that the health department often shuts down this commercial kitchen or commissary, your business may be negatively impacted in several ways. First, you'll lose access if the facility is shut down. Second, even a loose association with a commercial kitchen or commissary which is shut down could become a PR headache for your food business.

- Are cleaning and disposal facilities available? Does the commercial kitchen or commissary have dumpsters and recycling facilities?

If you cook using a lot of grease or oil, your facility will need to have a way to safely dispose of these materials.

- Do you simply need a space to store food and cook, or would you prefer a place that can help you obtain the proper permits, certifications, supplies, or truck wraps?

While these services may be more expensive up front, the long-term time savings and added expertise are sometimes worth every dime.

- Does this place have time slots available for the hours you need on a regular basis?

You don't want to sign up for a commercial kitchen or commissary only to discover that someone else reserves the kitchen regularly during your optimal hours.

REMEMBER

Some commercial kitchens are private, which gives you control over the kitchen, your equipment, and the storage. Private commercial kitchens are often much more expensive to rent, but the upside is that you have 24/7 access to your space.

Kitchen Essentials and Basic Food Preparation

- What storage space is available for your equipment or dry, refrigerated, or frozen foods?

While the commercial kitchen or commissary may have some of the equipment you need on hand, it's likely that you will still need space for small-ware or pieces unique to your business. You'll want to be able to store this equipment in a single space rather than lug it back and forth.

- What liability insurance is required?

Most commercial kitchens and commissaries require you to have liability insurance. Some may ask that you add them as an additional insured on your policy. With FLIP, you can add unlimited additional insured's to your policy for no cost.

What Makes a Commercial Kitchen?

Commercial kitchens are designed for production and food safety. Whether your commercial kitchen is in your home or in a separate facility, it's a good idea to design it so you can complete your work as efficiently as possible. Regardless of whether you're making a few batches of cookies a week or supplying all of the grocery stores in your area, your commercial kitchen will need to meet a list of requirements for cleanliness and safe food handling.

Licensing and Inspections of Commercial Kitchens

Commercial kitchens are inspected and licensed. The process of working with your local health department starts during the design stage, when an inspector reviews your plans to make sure they meet requirements such as suitable dish washing and refrigeration equipment. It's possible to get your home kitchen licensed as a commercial kitchen according to cottage kitchen laws that exist in many areas.

However, you'll still need to pay fees and have inspections. You must apply to have your commercial kitchen licensed when you originally design and build it, and you're also required to renew your license annually. Different health inspection agencies work with different types of food businesses. A retail food company will be licensed and inspected by a municipal or county health department, while a wholesale operation is typically licensed and inspected by a state or federal department of agriculture.

Food Service Equipment

Most commercial kitchens use professional equipment. Food service equipment is often made from stainless steel, which can be easily cleaned and sanitized. Professional refrigeration equipment is designed to cool foods quickly from temperature ranges

where food borne illnesses are most likely to grow. Industrial stoves have more intense heat output than residential ranges, with the capacity to cook in volume.

Dishwashing equipment must either reach temperatures hot enough to sanitize, or there must be multiple sink compartments to wash, rinse and sanitize by hand. A licensed commercial kitchen may use equipment designed for home cooking, without industrial capacity, but your setup must still meet a list of requirements for sanitation and **food safety**.

Keyword

Food safety is used as a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness.

Layout and Work Flow

Although local health departments are only concerned with the layouts of commercial kitchens insofar as food safety is concerned, such as not installing a mop sink too close to a prep sink, successful commercial kitchens are usually designed for easy flow of work. There should be sufficient space between appliances for employees to move and work without bumping into each other, and there should be enough counter space for efficient processes. Giving thought to layout and work flow can complicate the process of designing a commercial kitchen, but these steps save work and time in the long run.

Kitchen Staff Duties and Responsibilities

Commercial kitchens range from tiny, mom-and-pop restaurants to the high-volume production environments of convention centers and institutions. Yet whatever the kitchen's size, the individual tasks involved in producing meals are consistent and so are the duties and responsibilities of the kitchen staff. French chef Georges-Auguste Escoffier outlined the kitchen brigade system back in the nineteenth century, and it is still used today.

The Classical Brigade

At the top is the chef de cuisine, who determines the menu, pricing, overall direction and focus of the kitchen and staff. Next is the sous-chef, the main assistant to the chef de cuisine. The sous chef makes sure the cooks prepare the food according to direction and is responsible for the day-to-day operation of the kitchen. A range of chefs de partie, or station cooks, are

Kitchen Essentials and Basic Food Preparation

responsible for specific types of food. These included the saucier for sauces, the poisoner for fish dishes, the potager for soups and the garde-manger for turning leftovers into new dishes. The patissier, or pastry chef, prepared desserts and baked goods. There is also a chef de tournant, or relief chef, who fills in for any absent chef. In a large restaurant, a variety of apprentices and helpers may round out the standard kitchen's staff.

Chefs Today

Modern kitchens show less specialization, but the fundamental roles are the same. At the top is the executive chef, who is primarily a manager. If the chef owns multiple restaurants, each restaurant will typically have its own chef de cuisine managing the kitchen under the executive chef's direction. Large operations might have an executive sous-chef to ease the executive chef's workload. Under these top managers, are the sous-chefs? A large hotel might have several sous-chefs, or a small restaurant might have only a lead cook, but the role is the same as in a classical brigade. In many establishments the pastry chef runs a semi-autonomous kitchen in collaboration with the executive chef.

Line Cooks

In modern restaurant kitchens the roles of individual cooks aren't as clearly defined, and except in large hotels or institutions there aren't as many single-purpose work stations. Most cooking tasks are performed by line cooks, with more skilled and experienced cooks handling the most demanding jobs. Larger kitchens often designate a first cook or lead cook for that role, and first cooks will often supervise the kitchen in the sous-chef's absence. Less-experienced cooks begin by assisting at high-volume stations within the kitchen, or working independently in a less-demanding, lower-volume station.

Prep Cooks, Apprentices and Others

Large kitchens, and some smaller ones, employ prep chefs to perform basic duties such as peeling, cutting and portioning raw ingredients, or making stock and sauces. This frees up more experienced cooks for more skilled labor. Prep cooks are sometimes called cooks' assistants, and help by continuously stocking a busy station during service. Apprentices are cooks in formal training programs, learning through a combination of on-the-job and classroom instruction. They're typically given opportunity to learn all positions in the kitchen, beginning with prep work and then moving onto the line. The dishwasher also plays a role in the kitchen, speeding needed utensils back into service and occasionally helping out with food preparation.

Chef Salaries

According to the Bureau of Labor Statistics, the median salary for chefs and head cooks as of May 2016 was \$43,180. The median is a midpoint in a list, where half earned more and half earned less. One can expect high-end restaurants in large cities to pay their chefs higher salaries, while a mom-and-pop restaurant in a rural area might pay their chefs salaries towards the lower end.

Design a Small Commercial Kitchen

A well-designed commercial kitchen is integral to efficient, safe and profitable food preparation. However, there are several factors that you need to consider in order to design a small commercial kitchen. A commercial kitchen designed to consider ergonomics will be appreciated by the owner, chef and kitchen workers. The fewer steps required to complete a task, the better. Careful, considered planning in the design of the kitchen will save money and time during the construction phase and increase profitability over the life of the kitchen. Commercial kitchen design plans are dictated by space requirements, equipment and budget.

List the Foods You Plan to Prepare

Prepare a detailed list or menu of all foods you plan to prepare in the commercial kitchen. Describe in detail the method of food storage and preparation. This is one of the most important steps in planning a commercial kitchen and should be done prior to choosing space or equipment. You do not know what kind of equipment you will need until you have decided on the foods you will prepare.

Include all menu items you may wish to add in the future. (A small commercial kitchen approved as a bakery or sandwich shop may not meet health code requirements if you later wish to add soups, salads, deep-fried items or pizza.) Careful planning will avoid costly changes in equipment or construction.

List of Required Equipment

Make a complete list (including detailed measurements) of all equipment you will require for food preparation, refrigeration, display and storage. Every single item of equipment must meet commercial health code requirements. Determine if you will require a walk-in refrigeration unit or free-standing cold storage equipment. The size and amount of equipment, plus **food preparation** counter surface, will dictate the amount of space needed in your commercial kitchen.

Keyword

Food preparation is a broad topic, involving all of the steps that occur between obtaining raw ingredients and consuming them as food. It's something simplistic and complex, ubiquitous and artistic, personal and universal.

Choose a Location

Select a site location for your small commercial kitchen. Determine if you will construct a new building or remodel an existing commercial space. Contact your local zoning commission to determine if your new business venture complies with zoning restrictions.

Plan Your Space

Take exact measurements of the size of the space if you are remodeling an existing building.. Make note of existing windows, doorways, electrical outlets, plumbing lines and floor drains. Make a sketch of the existing space, making note of the present flooring material, wall and ceiling surface and all heating, exhaust or air-conditioning vents. For a new building, draw out a rough sketch of the dimensions and special features of proposed construction.

Plan How You Will Use the Space

Plan how you will use the space in your commercial kitchen. Ergonomics is the number one consideration in the design of kitchen space. Commercial kitchens should be designed for maximum labor efficiency, safety and functionality. Make sure that there is plenty of room to move about freely when carrying hot pots and bulky supplies. If employees do not have to waste time and extra movement completing a task, efficiency is increased and fatigue and workplace injuries are reduced.

Local Health and Safety Codes

Contact your local city or state building inspector and make an appointment to review your preliminary plans. Health and fire codes must be met. The space may need to be remodeled to satisfy requirements. Regulations govern how far a food preparation area must be away from any sinks or waste and disposal drains, the installation of vents and grease traps, the size and temperature capacity of hot water tanks and the design and location of food storage areas.

Make sure you receive a printed copy of all rules and regulations prior to designing the commercial kitchen space. Regulations vary from state to state, dependent on location, the size of the kitchen and the amount of patrons you are allowed to seat in the premises. City or county ordinances may apply.

Professionally Designed Blueprints

Employ the services of a professional architect or building contractor to design the commercial kitchen, incorporating all building and health department rules that apply. Prior to purchasing equipment or commencing construction or remodeling, the detailed drawings or blueprints must be reviewed and officially approved by both the health department and fire inspector. Blueprints must include electrical wiring schematics, fire suppression equipment installation drawings, emergency and handicap access routes, plumbing and electrical installation plans and a complete list of all building materials.

Commercial Restaurant Kitchen Equipment Checklist

One of the biggest investments that go into opening a new restaurant is in the kitchen. A commercial kitchen needs industrial-grade equipment that can withstand busy restaurant use. The layout of a commercial restaurant kitchen should allow food to flow seamlessly from the prep area to the line.

Sometimes a new restaurant has a fabulous location, but a small kitchen space, which dictates the kind of kitchen equipment needed. You may really want the six-burner gas range with a convection oven, but in reality, your kitchen will only fit a four-burner range.

Role of a Restaurant Kitchen

The kitchen is the heart of your restaurant, where your menu comes to life. It's where food is prepared, cooked and plated. Typically it is where the dishwasher is located, the food is stored, and is home to all the various utensils, dishes, and cooking equipment.

Unlike in a home kitchen, where it's just you and your family, a restaurant kitchen can have dozens of people in and out of it on any given shift, so it's important that it's organized well. This not only saves time during the busy rushes, but it also helps the staff avoid accidents and reduces excess waste.

Commercial Kitchen Costs

One of the biggest expenses for most new restaurants is the kitchen. A \$250,000 loan might seem like a lot of money when you are first getting ready to open, but it can run out quickly after you've invested in new, or even used, ranges, grills, ovens, and coolers.

If you purchase new kitchen equipment, remember that, just as with a new car, these items depreciate the moment they leave the showroom. One way to save money during the start-up process is to purchase used kitchen equipment. You take the risk of carrying no warranty with used equipment, but certain pieces, like gas ranges, rarely break during the warranty period anyway.

When shopping for kitchen equipment, remember that salespeople will try to sell you more than you need. While it is tempting to want to buy every shiny, popular item, you only need a few basics to get you started.

You can always add things later on. So, just walk away from the commercial smoker or the industrial grade ice cream maker until you are sure smoked ribs and soft serve are integral to your restaurant menu and concept.

Restaurant auctions are also a great place to find commercial kitchen equipment for pennies on the dollar. Auctions are a good place for picking up small items like dishware, flatware, bread baskets, condiment containers, and serving utensils.

You can also find good deals on gently used kitchen equipment, like oven ranges and refrigerator units. Be mindful that buying used restaurant equipment is not always your best option since it does not usually come with a warranty.

Kitchen Equipment List

A general checklist of everything you need to outfit your restaurant kitchen:

- Range
- Oven
- Grill
- Deep-fryer
- Reach-in cooler
- Walk-in cooler
- Freezer (either a chest, upright, or walk-in)
- Sauté pans
- Stock/soup pots

- Saucepans
- Baking sheets
- Pizza screens
- Baking pans
- Tongs
- Spatulas
- Ladles
- Chef's knives
- Pizza paddle
- Whisks
- Mixing bowls
- Plastic inserts for coolers
- Steam table
- Entrée plates
- Pasta bowls
- Appetizer plates
- Salad plates
- Dessert plates
- Metal or plastic shelves for walk-in cooler
- Cleaning rags
- Cleaning buckets (specifically labeled for cleaning products)
- Rubber floor mats
- Hand soap/sanitizer dispenser
- Fire extinguisher

Depending on the size of your restaurant kitchen and the restaurant concept, you may not need every item. Or you may need other types of equipment more specific to your restaurant concept, such as an ice cream maker if your restaurant will make artisan ice cream, or bread pans if you plan to make your bread in-house.

Basic Layout of a Commercial Kitchen

A typical restaurant kitchen has a layout featuring several different stations. A station is a designated area where a certain type of food is prepared. Stations help keep a restaurant kitchen running smoothly.

The number of stations in an establishment depends on the restaurant's menu. One restaurant might have several stations with specialized equipment, while another might have just one or two areas that are designated for cooking certain menu items.

The Kitchen Brigade

REMEMBER

Kitchen brigades exist for a reason. Restaurant kitchens can be chaotic, noisy, and stressful. A structured chain of command helps keep everything running smoothly when the tension is high. The kitchen brigade also clearly delineates every individual's role, allowing everyone in the kitchen to focus on simpler, clearer tasks.

As fine hotels — including their fine restaurants — became more common toward the end of the 19th century, commercial kitchens had to scramble a bit to catch up with the trend. The brigade de cuisine was born, which is effectively a nice, French way of saying the “kitchen staff.”

The mother of all brigade de cuisines might be the one that's credited with being the first, created by Chef Georges Auguste Escoffier in the later 1800s. His included more than 20 cooks and dozens of other staff to ensure that everything ran smoothly.

But the term “staff” doesn't really do a kitchen brigade justice. Some of these professionals are highly trained and accomplished chefs, while others might simply be learning the ropes, perhaps placed in charge of creating salads. Some might man a single kitchen work station, whereas others oversee the entire kitchen operation.

Kitchen brigades have decreased in size over the last century as technology has advanced, allowing fewer people to do the same work that once required multiple hands. Think of food processors when chopping and dicing were once painstakingly accomplished by hand. And restaurants tend to be smaller and more intimate these days than the grand establishments of the 19th century. But a chain of command still exists, and meal preparation is still sorted by stations in most establishments.

The Sauté Station

The most experienced cooks tend to work at the sauté station because this is where the most complicated dishes are prepared. A sauté cook must be skilled enough to cook several dishes at once during the dinner or other rush hours. In an extensive kitchen brigade, you might find the saucier here, the chef responsible for creating the sauces that accompany some dishes. Sometimes

the saucier will also serve as the sauté cook, responsible for sauces as well as all sautéed or pan-fried entrees.

A sauté station is typically equipped with a multiple-burner gas range, sauté pans and tongs. It usually has its own prep area with all the cook's necessary ingredients, as well as a cutting board, cooler, and seasonings.

The Grill Station

The grill can be a charbroiler or a flat top, and the grill station also usually has a cooler for grill items such as chicken, beef, or kebabs. You'll also find tongs and a grill brush here, along with whatever house seasoning you use.

The grill cook should also have a great deal of experience. Like the sauté cook or saucier, he's often cooking several dishes at once. He needs to know how to properly cook beef to well, medium, and rare temperatures, as well as fish and poultry.

The Fry Station

The fryer — or fryolator as it's sometimes called — is for foods like chicken wings, onion rings, and French fries. A great deal of food that goes into a fryer is frozen, so most fry stations have their own freezers. Other necessary equipment includes fry baskets, tongs, and bowls for breading.

The fry station is a good entry-level cooking position, ideal for someone just starting out in a restaurant kitchen. But one individual might assume the roles of both grill cook and fry cook in some kitchen brigades, particularly in smaller kitchen establishments.

The Pizza Station

If the pizza has a prominent place on your menu, you'll need a pizza station. A combo reach-in cooler with a prep area is a good choice for a pizza station. And, of course, you'll need an oven. You can invest in a specialty pizza oven or use the ovens in your gas range. A large oven that can cook several pies at once is your best bet if pizza is the focal point of your restaurant and you plan on serving a lot.

A well-stocked pizza station should also have pizza screens for cooking and serving, a pizza paddle, pizza cutter, and sheets of wax paper.

The pizza chef is also often an entry-level position. There's room for advancement from here.

Other Kitchen Stations

Restaurants with enough space might add a salad station or a dessert station as well, or these might be incorporated into the wait station. Many modern kitchens include a garde manger position here as well. The garde manger, often a cook rather than a chef, creates salads as well as cold appetizers and might plate some desserts as well.

The garde manger position can be much more advanced in larger, busier kitchens, however, and might be entrusted to create and oversee a wide range of chilled or cold dishes and even ice carvings. A chef typically mans this area.

A well-stocked salad station includes coolers for lettuce, vegetables, salad dressings, and plates. A dessert station should have a cooler for deserts and spaces for plates and dessert forks. It should include an area to assemble the desserts.

The Kitchen Line

Last but certainly not least is the kitchen line, the area where the servers pick up their food, although “the line” sometimes refers to the line of stations in a kitchen. It’s often manned by the expeditor — the individual who’s responsible for sending dishes to the dining room looking great. In larger kitchens, the expeditor might also communicate the waitstaff’s orders to the cooks in the brigade. The line should have garnish, plates, a spindle for order tickets, and heating lamps to keep the waiting food hot.

KITCHEN TOOLS AND EQUIPMENT

An equipped kitchen is incredibly important for any hospitality. Imagine baking a cake without mixing bowls or chopping veggies for a stir-fry without a knife. Whether you’re moving into a new home and need to stock your kitchen or you’ve been living with an ill-equipped cooking space for years – now is the time to take charge! While there are many cooking tools and equipment you can buy, here is a list of the top five utensils every kitchen needs.

In early kitchens, the kitchen equipment consisted of an open fire for cooking, which was generally placed on the floor, the fuel being coal, wood, sundried cow dung cakes or balls lighted between two or three bricks on which the cooking vessel is placed.

Heavy and Light Kitchen Equipment

The need for a piece of kitchen equipment which could be moved in and out of the house led to the development of the galvanized iron bucket with a grill on the top followed by the smokeless “chullah”, the “tandoor” or traditional Indian oven which was followed by the gas and electric stove and finally the cooking range and the solar cooker. This is but an example of one type of kitchen equipment, but the last few decades have seen a complete revolution in the kitchen equipment industry, which now provides for the modern caterer a range varying from very simple easy-to-use gadgets to extremely complicated automatic devices. This development has been in response to the needs of the different types and sizes of catering units varying from the simple fresh fruit kiosk to the streamlined restaurant, which have sprung up to satisfy the ever increasing demands of people for eating out. Kitchen equipment for food service establishments is basically not very different from that used for cooking and serving food at home except that, because of the volume of food cooked and served, and the greater degree of handling required, it is constructed for greater quantity, durability, speed, efficiency and economy.



Over the years, the activities of catering establishments have become more and more professional and the objectives have been constantly directed towards utilizing kitchen equipment for maximum efficiency, and at the same time maintaining a service that is clean and attractive to both worker and viewer.

Thorough knowledge of kitchen equipment is essential for success in the kitchen. Few food service operations depend on nothing more than range and oven, an assortment of pots and pans, and knives and other hand tools. Modern technology

continues to develop more and more specialized and technically advanced tools to reduce kitchen labor.

Much of this kitchen equipment is so complex or so sophisticated that only first-hand instruction and practice will teach you how to operate it effectively and safely. Other items, especially hand tools, is simple, and need no explanation, but require much practice to develop good manual skills.

There is a vast array of specialized kitchen equipment that is available for today's kitchens, items such as pasta machines, crêpe machines, burger formers, breading machines, cookie droppers, beverage machines, Greek gyro broilers, doughnut glazers, **conveyor** fryers, and so on. In this technological age, nearly every year brings new types of tools to simplify various tasks.

Keyword

Conveyor system is a common piece of mechanical handling equipment that moves materials from one location to another.

Introduction to Quantity Kitchen Equipment

Kitchen Equipment can be Dangerous. Modern cooking and food processing kitchen equipment has an extraordinary capacity to burn, cut, smash, mangle, and amputate various parts of the tender human body. It is not meant to intimidate you or scare you but to inspire a healthy respect for the importance of proper safety and operating procedures.



Not All Models Are Alike. Each manufacturer introduces slight variations on the basic kitchen equipment. While all convection ovens operate on the same basic principles, each model is slightly different, if only in the location of the switches. It is important to study the operating manual supplied with each item or to be “broken in” by someone who already knows that item well and has operate it.

Cleaning Is Part of the Operating

Procedure: Thorough, regular cleaning of all kitchen equipment is essential. Most large kitchen equipment can be partially disassembled for cleaning. Again, every model is slightly different. Operating manuals should give these procedures in detail. If a manual is not available, you must get the information from someone who knows the kitchen equipment.

Conserve Energy: At one time it was standard procedure for the chef to turn on the ovens and ranges first thing in the day and keep them on all day. Today high-energy costs have made such practices very expensive. Fortunately, modern kitchen equipment has shorter preheating times. Know the preheating time for all your kitchen equipment, so you don't need to turn it on before it's necessary. Plan production so that high energy using kitchen equipment is not in use.

Your Hands Are Your Best Tools: Machines are intended to be labor saving devices. However, the usefulness of specialized processing kitchen equipment often depends on the volume of food it handles. It takes less time for a cook to slice a few pounds of onions by hand than to set up a slicing attachment, pass the onions through it, and then break down and clean the kitchen equipment. This is why it is so important to develop good manual skills.

Cooking Equipment

Range Tops: The range is still the most important piece of kitchen equipment in the kitchen, even though many of its functions have been taken by other tools, such as steamers, steam kettles, tilting skillets, and ovens.

Ovens: The oven and the range top are the two workhorses of the traditional kitchen, which is why the two are so often found in the same units. Ovens are enclosed spaces in which food is heated usually by hot air or, in some newer kinds of ovens, by microwaves or infrared radiation.

In addition to roasting and baking, ovens can do many jobs normally done on the range top. Many foods can be simmered, stewed, braised, or poached in the oven, freeing the range top and the chef's attention for other tasks.

There are many other kinds of ovens beyond those discussed here, but many of them are for specialty or high-volume uses. These include conveyor ovens, which carry foods through the oven on a steel conveyor belt; holding ovens or warmers, which are designed to hold many types of foods at serving temperatures for extended periods without drying out or overcooking (this category includes ovens that also cook the food, then automatically switch to holding temperature); and high-volume roll-in ovens, with large doors into which one can roll carts loaded with trays of food.

Conventional Ovens: These ovens operate simply by heating air in an enclosed space. The most common ovens are part of the range unit, although separate oven units or ovens as part of a broiler unit are also available. Stack ovens are units that consist of individual shelves arranged one above the other. Pans are placed directly on the oven deck rather than on wire shelves. Temperatures are adjustable for each separate unit.

Convection Ovens: These ovens contain fans that circulate the air and distribute the heat rapidly throughout the interior. Because the forced air, foods cook more quickly at lower temperatures. Also, shelves can be placed closer together than in conventional ovens, without blocking the heat flow.

Revolving Ovens: These large ovens, also called reel ovens, are large chambers containing many shelves or trays on a ferris-wheel type attachment. This oven eliminates the problem of hot spots or uneven baking, because the mechanism rotates the foods throughout the oven. Revolving ovens are used in bakeshops and in high volume operations.

Slow-Cook-and-Hold ovens: While the traditional oven is nothing more than a heated box equipped with a thermostat, some modern ovens have more sophisticated features, such as computerized, electronic controls and special probes that sense when a roast is done and tell the oven to switch from cooking temperature to holding temperature. Many of these ovens are designed to be especially useful for low-temperature roasting. The sensitive controls make it possible to cook at steady, reliable temperatures of 200°F (95°C) or lower and to hold foods at 140°F (60°C) for long periods. Large cuts of meat take many hours to roast at a low temperature like 200°F (95°C). By setting the controls in advance, the operator can even let meats roast overnight, unattended. These ovens are available as convection ovens and as regular, stationary-air ovens.

Combination Steamer Ovens: A relatively new kind of oven is one that can be operated in three different modes: as a convection oven, as a convection steamer, and, with both functions on at once, as a high-humidity oven. Injecting moisture into an oven while roasting meats can help to reduce shrinkage and drying.

Barbecue Ovens or Smoke Ovens: Barbecue ovens are like conventional ovens,

but with one important difference: they are able to produce wood smoke, which surrounds the food and flavors it while it bakes or roasts. Special woods, such as hickory, mesquite, or various fruit woods such as apple or cherry, must be added to the smoke-producing part of the oven, according to the manufacturer's instructions. This device is usually nothing more complicated than an electric heating element that heats small blocks or chips of the wood so that they are hot enough to smoke but not hot enough to burst into flame. Depending upon on the model, various cooking features are available. Thus, ovens may have smokeless roast/bake cycles, cold-smoke cycles (with the smoke element on but the oven off), holding cycles, and broiling capabilities.

Infrared or Reconstituting Ovens: These units contain quartz plates that generate intense infrared heat. Infrared ovens are used primarily for reconstituting frozen foods. They bring large quantities of foods to serving temperature in a short time. The heat is even and controllable.

Microwave Ovens: In these ovens, special tubes generate microwave radiation, which creates heat inside the food.

Broilers and Salamanders: Broilers are sometimes called overhead broilers to avoid confusing them with grills. Overhead broilers generate heat from above; food items are placed on a grate beneath the heat source. Broiling is a favorite way of preparing steaks, chops, chicken, and many other items. Heavy-duty broilers produce very high heat and consume vast quantities of energy. Some broilers are said to go as high as 2000°F (1100°C) at the burner. Foods must be watched closely to avoid burning. Cooking temperature is adjusted by raising or lowering the grate that holds the food. Salamanders are small broilers used primarily for browning or glazing the tops of some items. They may also be used for broiling small quantities during off-peak hours. Salamanders are usually mounted above the range.

Grills: Grills are used for the same cooking operations as broilers, except the heat source is below the grid that holds the food rather than above it. Many people favor the taste of grilled foods, because of the "charcoal" taste that is actually created by smoke from meat fats that drip into the heat source. Although smoke from meat creates the taste that people associate with grilled foods, actual wood smoke flavors, such as hickory or mesquite smoke flavor, and can be added to foods if those woods are burned in the grill under the food. In order to do this, you must use a grill designed to burn such fuels.

Griddles: Griddles are flat, smooth, heated surfaces on which food is cooked directly. Pancakes, French toast, hamburgers and other meats, eggs, and many potato items are the foods most frequently cooked on a griddle. Griddles are available as separate units or as apart of a range top. Clean griddle surfaces after every use, so that they will cook at peak efficiency. Polish with a griddle stone or griddle cloth

until the surface shines. Follow the grain of the metal to avoid scratching. Condition griddles after each cleaning or before each use, to create a no-stick surface and to prevent rusting. Procedure: spread a thin film of oil over the surface and heat to 400°F (200°C). Wipe clean and repeat until griddle has a smooth, no-stick finish.

Keyword

Steam tables consist of two sets of tables of the energy transfer properties of water and steam saturated steam tables and superheated steam tables

Rotisseries: Rotisserie broilers cook meats and other foods by turning them slowly in front of electric or gas-powered heating elements. Even though classical cooking theory categorizes spit cooking as roasting, these cookers are more closely related to broilers, because the foods are cooked by the infrared heat of the elements. Although they are especially suitable for chicken and other poultry, rotisseries can be used to cook any meat that can be fastened to a spit. Both enclosed (oven like) rotisseries and open or unclosed units are available. Small units hold about 8 chickens and size range all the way to very large models that can hold as many as 70 chickens. Because the heating elements are on the side (or sometimes above), the fats and juices don't drip into the flames as they do with grills. Drip pans catch juices, which can be used for basting or gravy making.

Deep Fryers: A deep fryer has only one use – to cook foods in hot fat. Yet because of the popularity of fried foods, this function is an important one. Automatic deep fryers are powered by either gas or electricity and have thermostatic controls that maintain fat at preset temperatures. Automatic fryers remove food from the fat automatically after a preset time. Pressure fryers are covered fry-kettles that fry foods under pressure. Foods cook faster, even at a lower temperature.

Tilting Skillet: The tilting skillet, also known as the tilting brazier and tilting fry pan, is a versatile and efficient piece of kitchen equipment. It can be used as a griddle, fry pan, brazier, stew pot, stock pot, steamer, and bain marie or **steam table**. The tilting skillet is a large, shallow, flat-bottomed pot. Or, to look at it another way, it is a griddle with 6-inch high sides and a cover. This skillet also has a tilting mechanism that enables liquids to be poured out of it. Power may be gas or electric. Clean the skillet immediately after each use, before food has time to dry on. Add water, turn on the skillet to heat it, and scrub thoroughly.

Steam-Jacketed Kettles: Steam-jacketed kettles, or steam kettles, are sometimes thought of as stockpots that are heated not just on the sides as well. This comparison is only partly accurate, because steam kettles heat much more quickly and have more uniform and controllable heat than pots on the range.

Steam Cookers: Steam cookers are ideal for cooking vegetables and many other foods rapidly and with minimum loss of nutrients and flavor. For this reason, they are becoming more common in both large and small kitchens.

Processing Kitchen Equipment

Mixers: Vertical mixers are important and versatile tools for many kinds of food mixing and processing jobs, both in the bakeshop and in the kitchen.

Food Cutter: The food cutter or food chopper, familiarly known as the “buffalo chopper,” is a common piece of kitchen equipment used for general chopping of foods. A variety of attachments make it a versatile tool.

Slicer: The slicer is a valuable machine because it slices foods more evenly and uniformly than can be done by hand. Thus it is valuable for portion control and for reducing cutting loss.

Vertical Cutter/Mixer and Food Processor: The vertical cutter/mixer (VCM) is like a large, powerful, high-speed blender. It is used to chop and mix large quantities of foods very rapidly. It can also be used for puréeing (soups, for example) and for mixing liquids.

Holding and storage kitchen equipment

Hot Food Holding kitchen Equipment

Several types of kitchen equipment are used to keep food hot for service. This kitchen equipment is designed to prevent the growth of bacteria that can cause disease. Because food continues to cook at these temperatures, it should be held for as short a time as possible.

- Steam tables are standard holding kitchen equipment for serving lines. Standard-size counter pans or hotel pans are used as inserts to hold the foods. Flat or domed covers may be used to cover the foods.
- A bain marie is a hot water bath. Containers of foods are set on a rack in a shallow container of water, which is heated by electricity, gas, or steam.

Kitchen Essentials and Basic Food Preparation

The bain marie is used more in the production area, while the steam table is used in the service area.

- Overhead infrared lamps are used in service areas to keep plated food warm before it is picked up by the service staff. They are also used for keeping large roasts warm.

Cold Food Storage kitchen Equipment:

The quality of the food you serve depends to a great degree on refrigeration kitchen equipment. By keeping foods cold, usually below 40°F (5°C), the refrigerator (known in the trade as the 'cooler' or the 'box') guards against spoilage and bacterial growth. Freezers are used to hold foods for longer times, or to store foods purchased in frozen form. There are so many sizes, models, and designs of refrigeration equipment that it would be futile to try to describe them all.

To enable refrigerators and freezers to work at top efficiency, observe the following rules:

- Place items far enough apart and away from inside walls of refrigerator so that cold air can circulate. Freezers, on the other hand, work most efficiently when they are full.
- Keep the door closed as much as possible. When storing or removing an item, do it quickly and shut the door.
- Keep stored foods well wrapped or covered, to prevent drying and transfer of odors.
- Keep refrigerators spotlessly clean.

Pots, Pans, and Containers

Metals and Conductivity: A good cooking utensil should distribute heat evenly and uniformly. If it does not, it will develop hot spots that are likely to burn or scorch the food being cooked. Two factors affect a pan's ability to cook evenly:

Thickness of the metal. A heavy-gauge pot cooks more evenly than one made of thin metal. Thickness is most important on the bottom.

Kinds of metals. Different metals have different conductivity, which means the speed at which they transfer heat.

Pots and Pans and Their Uses

- Stock pot. A large, deep, straight-sided pot for preparing stocks and simmering large quantities of liquids. Stockpots with spigots allow liquid to be drained

off without disturbing the solid contents or lifting the pot.

- Sauce pot: Round pot of medium depth. Similar to stock pots, but shallower, making stirring or mixing easier. Used for soups, sauces, and other liquids. Sizes: 6 to 60 quarts (or liters)
- Round, broad, shallow, heavy-duty pot with straight sides. Used for browning, braising and stewing meats. Sizes: 11 to 30 quarts (or liters)
- Sauce pan. Similar to a small. Shallow, light sauce pot, but with one long handle instead of two loop handles. May have straight or slant sides. Used or general rangetop cooking. Sizes: 1 ½ to 15 quarts (or liters)
- Sauté pan, straight sided. Similar to a shallow, straight-sided saucepan, but heavier. Used for browning, sautéing, and frying. Also used for cooking sauces and other liquids when rapid reduction is required, because of broad surface area. Sizes 2 ½ to 5 inches (65-130mm) deep, 6 to 16 inches (160-400 mm) in diameter.
- Sauté pan, slope sided. Also called fry pan. Used for general sautéing and frying of meats, fish, vegetables, and eggs. Sloping sides allow the cook to flip and toss items without using a spatula, and they make it easier to get at the food when a spatula is used. Sizes: 6 to 14 inches (160-360mm) top diameter.
- Cast iron skillet. Very heavy, thick-bottomed fry pan. Used for pan frying when very steady, even heat is desired.
- Double boiler. Lower section, similar to a stockpot, holds boiling water. Upper section holds foods that must be cooked at low temperature and cannot be cooked over direct heat. Size of top section: 4 to 36 quarts (or liters)
- Sheet pan or bun pan. Shallow (1inch or 25 mm deep) rectangular pan for baking cakes, rolls, and cookies, and for baking or broiling certain meats and fish. Sizes: 18×36 inches (full pan), 18×13 inches (half pan) (46×66 cm and 46 x33 cm, respectively).
- Bake pan. Rectangular pan about 2 inches deep. Used for general baking. Comes in a variety of sizes.
- Roasting pan. Large rectangular pan about 2 inches deep. Used for general baking. Comes in a variety of sizes.
- Hotel pan also called counter pan, steam table pan, or service pan. Rectangular pans usually made of stainless steel. Designed to hold foods in service counters. Also used for baking and steaming, and foods can then be served from same pan. Also used for storage. Standard size: 12×20 inches. Fractions of this size (½, 1/3, etc) are also available. Standard depth: 2 ½ inches (65 mm). Deeper sizes are also available. (standard metric pan is 325 x 530 mm)
- Bain marie insert, usually called simple bain marie. Tall, cylindrical stainless

steel containers. Used for storage and for holding foods in bain marie (water bath (. Sizes 1 to 36 quarts (or litres)

- Stainless steel bowl. Round bottom bowl. Used for mixing and whipping, for production of hollandaise, **mayonnaise**, whipped cream, egg white foams. Round construction enables whip to reach all areas. Comes in many sizes.

Measuring devices

Keyword

Mayonnaise informally mayo is a thick cold condiment or dressing commonly used in sandwiches and composed salads or on chips (French fries).

The following kitchen equipment is discussed in terms of U.S measurements. Comparable items in metric units also available.

- Scales: most recipe ingredients are measured by weight, so accurate scales are very important. Portion scales are used for measuring ingredients as well as for portioning products for service.
- Volume measures used for liquids have lips for easy pouring. Sizes are pints, quarts, half gallons, and gallons. Each size is marked off into fourths by ridges on the sides.
- Measuring cups are available in 1-, $\frac{1}{2}$ -, $\frac{1}{3}$ -, and $\frac{1}{4}$ -cup sizes. They can be used for both liquid and dry measures.
- Measuring spoons are used for measuring very small volumes: 1 tablespoon, $\frac{1}{2}$ teaspoon, and $\frac{1}{4}$ teaspoon. They are used most often for spices and seasonings.
- Ladles are used for measuring and portioning liquids. The size, in ounces, is stamped on the handle.
- Scoops come in standard sizes and have a lever for mechanical release. They are used for portioning soft solid foods. The number of the scoop indicates the number of level scoop-fuls per quart (or liter). In actual use a rounded scoop-ful is often more practical, so exact weights will vary.
- Thermometers measure temperatures. There are many kinds for many purposes.
- A meat thermometer indicates internal temperature of meats. It is inserted before cooking and left in the product during cooking.

- An instant read thermometer will give readings within a few seconds of being inserted in a food product. It reads from 0oF to 220o Many chefs carry these in their jacket pockets like a pen, ready whenever needed. Instant-read thermometers must not be left in meats during roasting, or they will be damaged.
- Fat thermometers and candy thermometers test temperatures of frying fats and sugar syrups. They read up to 400oF
- Special thermometers are used to test the accuracy of oven, refrigerator, and freezer thermostats.

Knives, Hand Tools, and Small Kitchen Equipment

Knife Materials

The metal that a knife blade is made of is an important consideration, since the metal must be able to take and hold a very fine edge.

- Carbon steel is the traditional favorite, because it can be honed to an extremely sharp edge. Its disadvantages are that it corrodes and discolors easily, specially when used with acid foods and onions. Also, it discolors some foods (such as hard- cooked eggs) and may leave a metallic taste.
- Stainless steel will not rust or corrode, but it is much harder to sharpen.
- High carbon stainless steel is a restively new alloy that combines the best aspects of carbon steel and stainless steel. It takes an edge almost as well as carbon steel, and it will not rust, corrode, or discolor. Knives made of this material are highly prized and are relatively expensive.



Knife Handles

The tang is the portion of the metal blade that is inside the handle. The best quality most durable knives have a full tang, which means that the tang runs the full length of the handle.

Knives and Their Uses

- French knives or chef's knife – Most frequently used knife in the kitchen, for general purpose chopping, slicing, dicing and so on. Blade is wide at the heel and tapers to a point, blade length of 10 inches (260 mm) is most popular for general work. Larger knives are for heavy cutting and chopping. Smaller blades are for more delicate work.
- Utility or salad knife – Narrow, pointed knife 6 to 8 inches (160 – 200 mm) long. Used mostly for pantry work, cutting and preparing lettuce, fruits, and so on. Also useful for carving roast chicken and duck.
- Paring knife – Small pointed blade 2 to 4 inches (50-100 mm) long. Used for trimming and paring vegetables and fruits.
- Boning knife – Thin, pointed blade about 6 inches (160 mm) long. Used for boning raw meats and poultry. Stiff blades are used for heavier work. Flexible blades are used for lighter work and for filleting fish.
- Slicer – Long, slender, flexible blade up to 14 inches (360mm) long. Used for carving and slicing cooked meats.
- Serrated slicer- like a slicer, but with serrated edge. Used for cutting, breads, cakes, and similar items.
- Butcher knife- heavy, broad, slightly curved blade. Used for cutting, sectioning, and trimming raw meats in the butcher shop.
- Scimitar or steak knife- curved, pointed blade. Used for accurate cutting of steaks.
- Cleaver – Very heavy, board blade. Used for cutting through bones.
- Oyster knife – Short, rigid, broad bladed knife with a slight edge. Used for opening oysters.
- Clam knife – Short, rigid, broad bladed knife with a slight edge. Used for opening clams.
- Vegetable peeler – Short tool with a slotted, swiveling blade. Used for peeling vegetables and fruits.
- Steel – Not a knife, but an essential part of the knife kit. Used for truing and maintaining knife-edges.

- Cutting board – This is an important partner to the knife. Hard wood boards are favored by many chefs. Hard rubber or plastic boards are thought to be more sanitary, but there is some evidence that bacteria survive longer on plastic and rubber than wood. Cutting boards must be kept very clean.

Hand Tool and Small kitchen Equipment

- Ball cutter, melon ball scoop, or parisienne knife – Blade is a small, cup shaped half sphere. Used for cutting fruits and vegetables into small balls.
- Cook's fork – heavy, two-pronged fork with a long handle. Some for lifting and turning meats and other items. Must be strong enough to hold heavy loads.
- Straight spatula or palette knife – A long flexible blade with a rounded end. Used mostly for spreading icing on cakes and for mixing and bowl scraping.
- Sandwich spreader – A short, stubby spatula. Used for spreading fillings and spreads on sandwiches.
- Offset spatula – broad blade, bent to keep hand off hot surfaces. Used for turning and lifting eggs, pancakes, and meats on griddles, grills, sheet pans, and so on. Also used as scraper to clean bench or griddle.
- Rubber spatula or scraper – Broad, flexible rubber or plastic tips on long handle. Used to scrape bowls and pans. Also used for folding in egg foams or whipped cream.
- Pie server – A wedge shaped offset spatula. Used for lifting pie wedges from pan.
- Bench scraper or dough knife – A broad, stiff piece of metal with a wooden handle on one edge. Used to cut pieces of dough and to scrape workbenches.
- Pastry wheels or wheel knife – A round, rotating blade on a handle. Used for cutting rolled -out dough and pastry and baked pizza.
- Spoons: solid, slotted, and perforated – Large stainless steel spoons, holding about 3 ounces. Used for stirring, mixing, and serving. Slotted and perforated spoons are used when liquid must be drained from solids.

REMEMBER

The flooring used in the kitchen must necessarily be anti-skid or anti-slippery. Tiling adds a new dimension to the hygiene of the kitchen and also eases in its cleaning.

Kitchen Essentials and Basic Food Preparation

- Skimmer – Perforated disc, slightly supped, on along handle. Used for skimming forth from liquids and for removing soled pieces from soups, stocks and other liquid.
- Tongs – spring type or scissors type tools used to pick up and handle foods.
- Wire whip – Loops of stainless steel wire fastened to a handle. There are two kinds of whips :
- Heavy whips are straight, stiff, and have relatively few wires. Used for general mixing, stirring, and beating, especially heavy liquids.
- Balloon whips or piano wire whips have mainly flexible wire. Used for whipping eggs, cream, and hollandaise, and for mixing thinner liquid.
- China cap – Cone shaped strainer. Used for straining stock, soups, sauces and other liquids.

Fine china cap or chinois (shee-nwah) China cap with very fine mesh. Used when great clarity or smoothness is required in a liquid.

- Strainer Round-bottomed, cup-shaped strainer made of screen-type mesh or of perforated metal. Used for straining pasta, vegetables, and so on.
- Sieve Screen-type mesh supported in a round metal frame. Used for sifting flour and other dry ingredients.
- Colander Large perforated bowl made of stainless steel or aluminum. Used to drain washed or cooked vegetables, salad greens, pasta, and other foods.
- Food mill A tool with a hand-turned blade that forces foods through a perforated disk. Interchangeable disks have different coarseness or fineness. Used for puréeing foods.
- Grater A four-sided metal box with different sized grids. Used for shredding and grating vegetables, cheese, citrus rinds, and other foods.
- Zester Small hand tool used for removing the colored part of citrus peels in thin strips.
- Channel knife Small hand tool used mostly in decorative work.
- Pastry bag and tubes Cone-shaped cloth or plastic bag with open end that can be fitted with metal tubes or tips of various shapes and sizes. Used for shaping and decorating with items such as cake icing, whipped cream, duchesse potatoes, and soft dough.
- Pastry brush Used to brush items with egg wash, glaze, etc.
- Can opener Heavy-duty food service type can openers are mounted on the edge of the workbench. They must be carefully cleaned and sanitized every day to prevent contamination of foods. Replace worn blades, which can leave metal shavings in food.

Care and maintenance

All kitchen equipment large or small, heavy or light, requires care in handling, use and storage in order to extend its life to the maximum, minimize depreciation and maintain it in a reasonably attractive and efficient condition while in use. In small catering establishment the care and maintenance is generally entrusted to those who operate the kitchen equipment as the types invested on are generally small or medium duty pieces. In larger establishments where heavy-duty kitchen equipment predominates, a maintenance department performs this function.

In the case of small pieces like cutlery, some metals need less care than others do. Stainless steel is the most non-corrosive and easy to-care for material, while plated cutlery tends to get scratched easily and with time requires replating.

With kitchen tools like the chef's knives, choppers, etc. care is limited to preventing the blades from rusting in the case of iron blades, by keeping them dry and covered. It is also common practice to rub them with a little cooking oil to protect them from rusting through contact with air. With whisks and beaters it is the rotating parts or the wiry ends which need special attention. It is good practice to prevent food materials from on drying on the rotatory parts and posing a cleaning problem.

With heavier and larger pieces of kitchen equipment general cleanliness of the item and its environment is the guiding principle. The schedule below is a guide to the general care of most kitchen equipment.

Schedule for Care of Kitchen Equipment

- Keep all kitchen equipment clean.
- Wash all removable parts of kitchen equipment with suitable detergent and hot water after each use. In tropical summers this is not necessary, as the water in the taps is usually warm to hot, depending on the environmental temperature. After washing wipe kitchen equipment completely dry before replacing.
- All small kitchen equipment like cutlery, ladles, chopping boards, kitchen tools, etc. should be washed after use in (2) and replaced in drawers and racks built for the purpose and covered to prevent them from dust or dirt during storage.
- Check that all pieces are in working order. Close supervision at work is necessary to ensure a careful handling and to detect any deviations from effective operation, like an unusual sound, or fusing of warning lights, or ineffective thermostatic controls.
- Repairs must be attended to without delay to prevent the kitchen equipment from giving way and disrupting work for any period of time.

Kitchen Essentials and Basic Food Preparation

- A weekly, fortnightly or monthly programme for oiling or servicing the kitchen equipment to maintain movable parts or machinery in order is important. The service instructions provided by the manufacturer along with the kitchen equipment are a good guide to the service procedure that should be followed. It is useful to prepare an instruction card for every kitchen equipment carrying the manufacturer's instruction in as simple a form as will be understood by the operators of the kitchen equipment. This card could be kept near each major piece of kitchen equipment.
- All electrical inputs to the kitchen equipment should be checked periodically to ensure that proper electrical load is available for efficient functioning.
- Insulations, plumbing, and other connections need periodic checks to keep kitchen equipment at optimum efficiency.
- Make full use of warranty periods to help train organization staff to learn regular maintenance procedures from the manufacturer's engineers.
- Assign the care of each machine to one responsible person.

Money, time and effort spent on care helps to maintain kitchen equipment in continuous working order, while that spent on repair can mean interruption in work causing unnecessary strain on staff, in addition to extra costs.

It is beneficial to keep records of all amounts spent on care and maintenance of every large kitchen equipment. This helps to estimate the depreciation every year. Excessive costs shown through records for a particular year can help to draw attention to high maintenance costs, which weighed against the cost of the kitchen equipment may result in a decision to change the model for a more efficient one. Records can also help to detect inefficient in operation, or defects in design or manufacture.

Thus, if kitchen equipment is cared for systematically and proper procedures followed, maintenance follows on its own to prolong the life and optimum usage of the kitchen equipment. The cleaning schedules for some commonly used kitchen equipment in small food service establishments are given under their respective heads:

Cooking Equipment: (Hot plates, gas stoves or ranges)

- Wipe the top daily while still warm, using wet cloth or sponge.
- Any foods spilled and burnt while cooking may require the use of mild detergent or scouring pad.
- For open burners, a weekly boil in warm soapy water will help remove any food particles that may have been the cause of blockade leading.
- Wipe dry with slightly oiled cloth.

Ovens

- Wash, rinse and outer surfaces daily, after every meal.

- Use liquid wax for enamel finished parts.
- Brush the inside to remove any sediments due to food particles charred during cooking. Any sticky areas may be wiped with a wet cloth after washing the oven and then switching it off.
- Clean all plastic knobs with cloth and wipe dry.

Refrigerators

- The outside surfaces should be cleaned as for oven daily.
- A weekly cleaning of the insides of a refrigerator is sufficient especially if the establishment is small. For this the machine should be disconnected, doors opened and the shelves removed and washed in warm water according to manufacturer's instructions.

Preparation kitchen Equipment

- All parts, which are removable, should be cleaned after every use with light detergent.
- Sharp edges should be carefully handled for cleaning, drying and replacing immediately for use.

Coffee Urn

- Urns should be emptied after each meal and the insides cleaned with hard brush using a solution of sodium bicarbonate.
- Outer surfaces as for any other kitchen equipment.

Maintenance Costs

The cost of maintaining any kitchen equipment should be determined on the basis of the following factors:

- Cost savings in terms of fuel consumption, as compared with the fuel bill prior to the installation of the piece.
- Cost of servicing and regular cleaning which would involve the cost of cleaning materials and detergents.
- Rate of depreciation calculated over the expected life of the kitchen equipment.
- Any savings that the installation would have resulted in, in terms of better utilization of raw materials and prevention of waste.
- Any savings brought about due to elimination of daily wage workers, as in the case of people being employed seasonally for peeling of vegetables for establishments which function for a limited period in the year, as for school meals, college canteens, and the like.

CASE STUDY

INSIDE THE MONDRIAN HOTEL'S NEW KITCHENS

The Mondrian Hotel, also known as Sea Containers, is one of the hottest new additions to the London hotel scene. FEJ finds out how the Morgans Hotel Group-owned property worked with Williams Refrigeration to solve the vast cold storage and preparation needs it had across multiple kitchens on different floors.

The Mondrian London in the heart of the Southbank has barely been open for six months, but it already has all the attributes to become one of the capital's iconic hotels. A transatlantic fusion of English and American aesthetics, it is inspired by the glory days of 1920s ocean liners — a theme that runs from the lobby's giant, copper-clad wall, shaped like a hull, to the first-class menu served in the brasserie-style restaurant, Sea Containers.

Sea Containers is open from 6am to midnight and serves up to 700 covers every day from a theatre-style kitchen at the rear of the restaurant, overlooking the Thames. Designed by foodservice design consultants Tricon and fitted by contractor Vision Commercial Kitchens, the kitchen contains an array of catering equipment from some of the top names in the industry. Executive chef Luke Rayment (pictured opposite page), who oversees the entire operation, admits there is a reason for that, namely that the kit gets a pounding. "It has to be very hard wearing," he says.

Rayment works alongside the hotel's culinary director, New York chef Seamus Mullen, who together have created a menu that blends the best of British and American cuisine, but is very much about sharing and healthy foods, reflecting the restaurant's youthful, refined ambiance. The shaved mushroom salad with pine nuts, Idiazabal cheese and brown butter vinaigrette won an industry award within months of the hotel opening.

The Sea Containers kitchen, along with separate bakery and banqueting kitchens, form the three major catering areas within the hotel, while there is also a staff canteen with cooking equipment, refrigeration and servery. Some of the industry's top brands are evident throughout the kitchens, from the Bonnet cooking suites and Rational and Turbofan ovens to the Mono baking equipment and Trak counters.

One of the most visible brands within the back-of-house operations is Williams Refrigeration, the Norfolk-based manufacturer of refrigeration systems. It provided virtually all of the refrigeration for the hotel, accounting for some £200,000 of the equipment spend.

With a menu based on fresh, locally-sourced ingredients, the specification was for reliable, functional and adaptable refrigeration. The Mondrian's Rayment says: "Sustainability is a very important issue for the hotel. We source locally and responsibly, whether its food or equipment, and we try to have the least possible impact on the environment. The equipment was built around what we do. Some refrigeration can look great, but is complicated to use. The Williams kit works very well, it's functional and easy to clean."

Williams supplied a wide variety of equipment, including upright cabinets, 'biscuit top' undercounters, cold rooms and blast chillers, as well as refrigeration systems for two temperature-controlled prep rooms for fish and general produce. 28 cabinets were installed in total, while three more have just been ordered to provide it with extra capacity beyond what it thought it initially needed.

An important facet of the refrigeration contract was the design of seven walk-in coldrooms. Williams Refrigeration Southern undertook the site survey for the coldrooms, supplying the drawings as well as testing and commissioning the units.

Each coldroom was constructed using Williams' roof and wall panels with camlocks, which are securely foamed into tongue and groove joints for a tight-locking, stable structure. These eliminate the risk of ice build-up in joints and ensure the 'thermal envelope' is 100%, thereby reducing energy consumption. The panels use 90mm, zero ODP foam insulation for optimum efficiency.

The coldrooms include dedicated units for beverages, dairy, meat, general purpose items and two freezers. Each is fitted with bumper rails, to prevent damage from trolleys used to transport the food, and viewing panels. The doors are also fitted with curtains to help prevent temperature loss while open.

One notable aspect of the coldrooms is the heavy duty doors, which have a specific role to play. "During the installation, it emerged that the coldrooms opened onto main fire escape corridors, so Williams replaced the original doors with PIR fire retardant ones," explains Rayment. "I'd never seen these types of doors on a coldroom. Williams created a special lock for them, too, with an interior release mechanism and reinforced handles."

Malcolm Harling, sales and marketing director at Williams, says that the Mondrian is one of a growing number of customers selecting fire rated doors. "It is becoming more prevalent to see customers needing fire retardancy up to 30 minutes. Our standard panels do have a certain amount of retardancy but not enough for insurance purposes that the customer here needs, so the big heavy duty doors along with the PIR fireproof panels, particularly in the corridors, were a feature that the designers had to build in."

Kitchen Essentials and Basic Food Preparation

Harling added that Williams was also able to offer the hotel a thermal imaging service, to prove that the coldrooms are properly insulated.

“We generally build our coldroom structures with camlocks, so we lock down the roof, the walls and the floor to provide a completely solid structure that will give you the 100% refrigeration thermal envelope. Some of our competitors use a jigsaw to cut the walls and sometimes the floor, and if you don’t get a perfect line you don’t get a complete insulation. We do thermal imaging to prove that all our edges are 100% tight, so there is no way for cold air to escape or warm air to get in.”

Nutical reminders are everywhere you look in the Mondrian, but with some of the best kit on the market installed in its kitchens, the hotel’s catering staff have every right to think their job should be plain sailing.

SUMMARY

- The kitchen is the most prominent and enclosed section or area in which edible food ingredients are brought together, gathered, combined through proper processing and cooked by various means of cooking methods for consumption.
- The word kitchen comes from the French word “Cousin”, which means art of cooking or food preparation in the kitchen.
- In an effective kitchen, everything has its place and there is plenty of open space with appropriate containers allocated to hold ingredients needed for upcoming jobs.
- In many kitchens, it's up to a senior chef to review all food going out and make sure it's up to standard - taste, temperature, texture, look, smell.
- Professional refrigeration equipment is designed to cool foods quickly from temperature ranges where food borne illnesses are most likely to grow.
- Prep cooks are sometimes called cooks' assistants, and help by continuously stocking a busy station during service.
- Kitchen brigades have decreased in size over the last century as technology has advanced, allowing fewer people to do the same work that once required multiple hands.

MULTIPLE CHOICE QUESTIONS

1. **What things should you do before you start cooking?**
 - a. Wash your hands
 - b. Put on an apron
 - c. Tie back long hair
 - d. Make sure benches and equipment are clean
 - e. All of the above
2. **If you spill something on the floor, what should you do?**
 - a. Leave it, someone else will clean it
 - b. Tell the teacher and get her/him to clean it
 - c. Wipe it up immediately
 - d. Pretend it didn't happen
3. **What should you use to take something out of a hot oven?**
 - a. Tea towel
 - b. Paper towel
 - c. Oven mitts
 - d. Your hands
4. **If you are using a saucepan, where should the handle be facing?**
 - a. Out
 - b. Inwards
 - c. Over the edge of stove
 - d. Over another hotplate/jet
5. **Where or on what do you put something that you have just taken out of the oven?**
 - a. On the bench top
 - b. On a wooden board
 - c. On the stove top (if it's not turned on)
 - d. Both B & C
6. **Always cut/chop food on a _____.**
 - a. Counter top
 - b. Cookie sheet
 - c. Cutting board
 - d. None of the above

7. What should you use to stir hot foods?

- a. Metal spoons
- b. Spatula
- c. Wooden spoon
- d. Ladle

REVIEW QUESTIONS

- 1. Discuss on kitchen organization.
- 2. What are the outlets of kitchen triangle?
- 3. How to make restaurant kitchen planning?
- 4. What should anyone look for when renting a commercial kitchen or commissary?
- 5. Explain the use of heavy and light kitchen equipment.

Answer to Multiple Choice Questions

- 1. (e) 2. (c) 3. (c) 4. (b) 5. (d)
- 6. (c) 7. (c)

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CHAPTER 2

EXISTENCES OF FOOD PREPARATION

INTRODUCTION

People process foods every day when preparing meals to feed their families. However, the term “food processing” is broader than preparing and cooking foods. It involves applying scientific and technological principles to preserve foods by slowing down or stopping the natural processes of decay. It also allows changes to the eating quality of foods to be made in a predictable and controlled way. Food processing uses the creative potential of the processor to change basic raw materials into a range of tasty attractive products that provide interesting variety in the diets of consumers.

All food manufacturers should make safe foods so that consumers are not at risk. This is not only microbiological risks, but also glass splinters, pesticides or other harmful materials that can get into the food and lower its quality. Consumers consider eating quality as the main factor when buying foods, and a food should fit in with traditional eating habits and cultural expectations of texture, flavour, taste colour and appearance. For some

LEARNING OBJECTIVES

1. Know about various food preparation techniques
2. Explain the scientific methods of food preparation and sanitation



foods, nutritional quality (e.g. protein content, vitamins and minerals, etc.) is an important consideration. Product quality is affected by the raw materials, the processing conditions and the storage and handling that a food is subjected to after processing. This information is used to prevent food spoilage or food poisoning. Details of the composition of raw materials or products can be obtained from university food science departments, bureaux of standards or food research institutes.

So, variety is brought into the food by preparing 'parantha' or 'puri' from the wheat flour. Similarly, a meal is prepared by using different methods of cooking. For example, a menu of dal, rice, puri and kheer involve a different method of cooking them. This way, cooking helps us in making meals interesting.

A food item goes through various stages of preparation before it is cooked. If we go wrong in these steps of cooking the final product will not be as expected. Thus, food preparation is not only an art but a science too. In this lesson, you will learn to use various methods of pre-preparation and preparation of food and also learn about the changes that occur in the food during its preparation.



FOOD PREPARATION TECHNIQUES

Food preparation has been a constant chore since the first human beings picked up cutting and mashing stones. In return, this effort to make food edible, preserve it, and transform its character has sustained an ever-increasing population. Many techniques, including grinding, sifting, drying, salting, sealing, fermenting, and applying heat, are extremely ancient. Few fundamentally new techniques have been introduced in the past two centuries, among them microwaving. The main long-term change has been the shifting of tasks from the domestic hearth to centralized factories.

The processes of food preparation might be divided according to their primary science, whether physical (such as extracting nuts from their shells), chemical (adding salt), or biological (brewing beer). Perhaps more helpfully, they might be categorized according to their intended purpose. Some foods are toxic until prepared properly. Others are scarcely edible until softened. Preparation can bring together nutritional variety. It can add intriguing flavors. Food preparation can also have negative impacts, especially on nutrients.



Viewed socially, food preparation has typically been female work, requiring hours of often hard and repetitive effort. Over history, it has gradually been shifted out of the home and typically made a male concern. Butchery, milling, baking, and brewing are among the oldest extra domestic industries, conducted by specialists for thousands of years. These and most other tasks have been more scientifically and centrally managed over the past two centuries.

Preparation is a core human activity that can be examined from the perspectives of many biochemical, nutritional, technical, cultural, social, historical, and economic sciences. Many aspects of food preparation are treated in greater detail elsewhere in this work. This entry outlines its purposes, its history and social position, and provides snapshots of people at work, from an ancient Roman peasant making a

moretum (suggestive of an Italian pesto) to global corporations preparing hamburgers.

Methods of Frying

Fried foods, though widely considered indelicate, are also among the most ephemeral. Regarding fried foods, a Chinese proverb states: It is better that your guests wait for their meal, than that the meal wait for the guests. Fried dishes cannot wait, and if allowed to stand, rising interior steam causes them to lose their crisp exterior and, thereby, their character.

Frying is a means of heat transfer that works by both conduction (direct contact) and convection (the natural movement of molecules in a fluid). Like broiling, boiling, and baking, frying is a method of cooking, but unlike water-based cooking (boiling, braising, or steaming), frying uses dry heat. Oil wicks moisture away from food surfaces. Because oil heats to a higher temperature than water, frying is faster than boiling, and fried surfaces, rather than becoming soft as they do when boiled, broiled, or steamed, coagulate. The resulting fried food is incomparably tasty, crisp, and beautiful. Frying comprises not only deep-frying and pan-frying, but also the cooking method used to prepare common foods such as pancakes and fried eggs as well as less-known foods such as the Indian dish dalia uppma, an herbed bulgur with fried vegetables. Most, but not all, of the world's cultures have practiced frying.



Some fried foods are so popular that they can be identified as cultural stereotypes. American french fries and Middle Eastern falafel (chickpea or fava bean fritters) are examples. Native Americans of the Southwest are known for fry bread, and corn dogs are associated with New York's Coney Island. The American South has southern fried chicken, while in Asia, sweet potatoes are fried and served from vendors' carts. In

Mexico, on the zócalo (the central square), vendors working from carts sell churros, a deep-fried pastry.

Advantages and Disadvantages

Through the ages, frying has remained popular because it adds an outside layer of flavor and crunch to soft foods, such as eggplant and okra. In addition, frying cooks and browns beautifully. It adds texture and yields the smooth and taste-imparting feel that comes only from various oils and fats.

On the negative side, the process of deep-fat frying is dangerous and requires special equipment and controlled environments. To avoid the overflow of hot oil from the pan, large temperature-controlled deep fryers are used, and these pans are filled only about one-third of their depth with oil. In addition, to maintain the desired high temperature, deep fryers are not filled with food, but rather, food is fried in small batches. Moist foods are not placed in hot oil because they cause boiling and popping, which can be dangerous. To avoid burns and fires protective gloves and clothing, long-handled utensils, as well as fire extinguishers and baking soda, are used. Unlike water, oil can catch on fire, and oil fires spread quickly. If a pan of oil catches fire, the pan is covered with a lid, doused with salt, or sprayed with a fire extinguisher. A stream of water is not effective in dousing an oil fire.

The use of oils and fats has also become a health concern. Those who support frying claim that with fast, clean frying, only a small amount of oil remains on the food, and certain oils and fats are healthier than others. Olive oil and canola oil, monounsaturated vegetable oils, are recommended for human consumption, while saturated oils, such as palm and coconut oil, or saturated fats, such as butter or lard, are not recommended. Canola oil is considered good for one's health because of its ratio of linoleic acid (an omega-6 fatty acid) to linolenic acid (an omega-3). A balance of omega-6s and omega-3s is an asset to health, with other oils often lacking the omega-3s. Canola oil offers the best balance for omega-3 and omega-6 fatty acids.

Methods of Frying and Equipment

Frying methods include sautéing, stir-frying, pan-frying, and deep-fat frying. These styles of frying form a continuum based on the amount of oil used, with sautéing using the least oil and deep-fat frying using the most.

Each of the principal frying methods is associated with a particular pan. Pan-frying is practiced in stainless steel, aluminum, and heavy cast-iron skillets, all with sloping sides. To sauté, there exists a French sauterne or sauté pan, which is wide like a skillet, but has low and straight sides. Deep-frying occurs in the deep fryer

Kitchen Essentials and Basic Food Preparation

or wok, with either a fry basket insert, the long-handled slotted skimmer, or, as in China, the spider (small basket) attached to a long bamboo handle. Deep-frying thermometers are used to help the cook maintain a constant temperature. Finally, when fried foods, such as bacon or potato chips, are removed from the oil, they are placed on drip racks or paper towels. Deep-fat fryers are available in many sizes, from large multigallon commercial vats to small personal fryers that hold two or three cups of oil.



Other frying pans, too, are associated with specific foods. In crêpe pans, thin pancakes are cooked in a style associated with classical French cooking. Round or oval omelet pans are used to fry omelets. Heavy cast-iron chicken fryers are deep pans that include nipped lids that allow moisture to drip back onto the frying chicken. Restaurant kitchens often fry eggs, pancakes, sausages, and sandwiches on large steel frying surfaces called **griddles**, but home cooks can purchase small, hand-held griddle pans for the same purpose.

With a wok, many foods are stir-fried in the style of several Asian traditions. Woks are available as self-contained electric units or as wide, deeply sloped circular pans that fit over a gas flame. They are often sold with lids so that foods can be steamed for part of the cooking time. Before vegetables, seafood, poultry, or meats are added to the stir-fry pan, a small amount of oil is heated to a high temperature. In China, where stir-frying is an ancient tradition as well as a modern art form, small pieces of food are placed in a large pan over intense heat, and they are stirred quickly as they cook.

Need of Microwaving

Microwaving is cooking food in a microwave oven. It is often quicker and more convenient than equivalent methods such as boiling or baking. Many vegetables, for example, can be microwaved instead of boiled or steamed.

As with other cooking instruments some care must be taken and food should be checked regularly if it is microwaved for a long period. Aluminum foil and other metal items should never be put in a microwave. Always use a container labelled “microwave safe” to avoid toxins in foods. Similarly, metal decorations on the dishes can damage the dishes and denature the food. Items are often extremely hot after being microwaved, so take care when removing them.

Cooking with a microwave oven is highly convenient, as it's simple and incredibly fast. However, many people believe that microwaves produce harmful radiation and damage healthy nutrients. Therefore, you may wonder whether it's safe to use these appliances.

Keyword

Griddle is a cooking device consisting of a broad flat surface heated by gas, electricity, wood, or coal, with both residential and commercial applications.



Microwave ovens are kitchen appliances that turn electricity into electromagnetic waves called microwaves.

These waves can stimulate molecules in food, making them vibrate, spin around, and clash with each other — which turns

the energy into heat. This is similar to how your hands heat up when you rub them together. Microwaves primarily affect water molecules but can also heat up fats and sugars — just to a lesser extent than water.

Effects on Nutrient Content

Every form of cooking reduces the nutrient value of food. The main contributing factors are temperature, cooking time, and method. During boiling, water-soluble nutrients may leak out of the food. As far as microwaves go, cooking times are generally short and the temperature low. Plus, the food is usually not boiled. For this reason, you would expect microwave ovens to retain more nutrients than methods like frying and boiling. According to two reviews, microwaving does not reduce nutrient value more than other cooking methods. One study on 20 different vegetables noted that microwaving and baking preserved antioxidants the best, while pressure cooking and boiling did the worst.

However, one study found that just 1 minute of microwaving destroyed some of the cancer-fighting compounds in garlic, while this took 45 minutes in a conventional oven. Another study showed that microwaving destroyed 97% of flavonoid antioxidants in broccoli, while boiling only destroyed 66%.

This study is often cited as evidence that microwaves degrade food. Yet, water was added to the microwaved broccoli, which is not recommended. Keep in mind that the type of food or nutrient sometimes matters. It is not recommended to heat human milk in a microwave because it can damage antibacterial agents in the milk. With a few exceptions, microwaves tend to preserve nutrients very well.

Food Baking Techniques

Baking, process of cooking by dry heat, especially in some kind of oven. It is probably the oldest cooking method. Bakery products, which include bread, rolls, cookies, pies, pastries, and muffins, are usually prepared from flour or meal derived from some form of grain. Bread, already a common staple in prehistoric times, provides many nutrients in the human diet.

Baking techniques improved with the development of an enclosed baking utensil and then of ovens, making possible thicker baked cakes or loaves. The phenomenon of fermentation, with the resultant lightening of the loaf structure and development of appealing flavors, was probably first observed when dough's or gruels, held for several hours before baking, exhibited spoilage caused by yeasts. Some of the effects of the microbiologically induced changes were regarded as desirable, and a gradual acquisition of control over the process led to traditional methods for making leavened bread loaves. Early baked products were made of mixed seeds with a predominance

of barley, but wheat flour, because of its superior response to fermentation, eventually became the preferred cereal among the various cultural groups sufficiently advanced in culinary techniques to make leavened bread.



Brewing and baking were closely connected in early civilizations. Fermentation of a thick gruel resulted in a dough suitable for baking; a thinner mash produced a kind of beer. Both techniques required knowledge of the “mysteries” of fermentation and a supply of grain. Increasing knowledge and experience taught the artisans in the baking and brewing trades that barley was best suited to brewing, while wheat was best for baking.

It is important to follow exactly the directions in a recipe for baking foods. Some directions say to only grease the bottom of a pan. In the case of a quick bread loaf, greased pan sides because the bread to “slip” down the pan as it is baking and result in a product that is not as high as it should be.



“Grease” a pan

Use a small piece of waxed paper or cover your fingers with a plastic sandwich bag to dip into shortening. Do not use reduced

Kitchen Essentials and Basic Food Preparation

calorie margarine or other soft spread margarine. Spread the fat evenly over the bottom, sides, and corners of the pan. Other ways to grease a pan include:

- Pour a small amount of cooking oil into the pan.
- Wipe it with saved margarine or butter stick wrappers.
- Use a “spray” coating, unless a recipe says not to.

“Grease and flour” a pan

- First, grease the pan.
- Then, place approximately one tablespoon of flour in the pan. (For a chocolate cake, use a little cocoa powder instead of flour so the sides of the baked cake are not white.)
- Shake the pan, tilting it back and forth, until it is coated with the flour.
- Dump out and discard any flour that does not stick.



Selecting Baking Pans

Baking results are affected by the baking pan used. Most recipes recommend which type of pan and which size to use. A pan should not be more than two-thirds full. To determine the pan size if it is not marked, measure from one top inside edge to the opposite inside edge.

Dark pans and glass pans absorb heat (catch and hold heat), so foods cook faster. If you use a glass pan for a recipe that calls for a metal pan, reduce the baking temperature by 25°F. Food tends to brown more quickly in these types of pans. Shiny pans do not have this problem because they deflect heat away.

This size pan	May result in a baked product that is:
Oversized	<ul style="list-style-type: none"> • Too thin. • Dried out if baking time is not adjusted. • Burnt.
Too small	<ul style="list-style-type: none"> • Overflowing in the oven.

Baking Tips

- Use the pan the recipe suggests.
- Preheat the oven if the recipe indicates.
- Adjust the baking temperature if a glass or nonstick-type pan is used.
- If only one baking pan of food is in the oven, place it near the center of the oven. Food placed low in the oven cooks faster on the bottom than on the top. Food placed high in the oven cooks faster on top than on the bottom. It may get too brown on top as well.
- If more than one baking pan is placed on an oven shelf, leave at least two inches of space in between.
- Round shapes produce more even browning than pans with square corners.
- Foods baked in thick metal pans do not brown as much as those baked in thinner pans, especially if the baking time is short.

Basting

Basting is used when roasting or grilling meats. The cooking juices in the pan, melted butter, a marinade, or other sauces are either brushed on the meat, or sucked from the pan into the turkey baster and squeezed out over the meat.

When roasting meat, the recipe may call for basting the roast while it cooks. Basting is a culinary technique for moistening the surface of roasting meat, poultry, or other foods with pan drippings, stock, butter, or some other liquid. In addition to contributing moisture, basting adds flavor (as long as the basting liquid is flavorful) to the surface of the meat.

There are a few different ways to baste, from simply using a spoon to utilizing a pastry or basting brush. There are also different perspectives on the benefits of basting and whether it is worth the trouble.



Ways to Baste

REMEMBER

Basting technique often requires minimal or no added liquids other than what the meat already contains, for loss of moisture is virtually negligible from inside the bag. Perhaps even better, some oven pans are designed to carry a lid.

If you choose to baste the meat, you can also choose which type of tool you'd like to baste with. Basting is usually accomplished by using a basting brush to apply the liquid to the meat, dipping the brush into the drippings in the bottom of the roasting pan and then brushing it onto the meat. The brush allows you to cover a large surface area easily, but may not be the easiest utensil for “grabbing” the liquid from the pan.



Using a basting bulb is another option. Like a large eyedropper, a basting bulb is perhaps more efficient than a

brush at extracting the liquid from the bottom of the pan, but not necessarily better at redistributing it onto the surface of the meat. By squeezing the rubber bulb while the bottom of the tube is submerged in the drippings, the liquid is pulled into the basting bulb; a simple squeeze again will then release the liquid onto the roast, but, as it is liquid, it will roll off of the sides of the meat.

If you are having trouble deciding between the two, there are a few factors to consider. A basting brush is easier to clean than a bulb, which although often dishwasher-safe can have a tendency to lodge food particles in the tube and squeeze bulb. A brush is also more versatile, since you can use it as a pastry brush as well, or to distribute oil or butter on a grill or in a pan. There are really no additional uses for a basting bulb. However, if you find that the basting liquid isn't really adhering to the brush, the bulb may be a better tool for you.

Of course, you can also use a large spoon to distribute the liquid on top of the roast.

The Basting Debate

Although you may discover that every Thanks giving turkey recipe says to baste the bird as it cooks, there are some chefs who prefer not to baste at all. They believe that basting slows down the cooking process since it requires opening the door of the oven over and over again, which lowers the oven temperature. The slower the cooking time, the longer the roast is in the oven which means you risk drying out the meat.

The debate also rests on the purpose of basting, which is to add color, flavor, and crispness to the exterior of the roast. An important point to keep in mind is that basting does not affect the flavor or texture of the meat itself, meaning it won't make the interior more flavorful or more tender or moist. It may assist in turning the chicken skin a nice golden brown, but the process of roasting in the oven should do that on its own.

Why Baste in the First Place?

One theory about basting is that it hails from an era when pork was customarily cooked to a point that we now consider to be overcooked. The resulting dry pork no doubt led many cooks to believe that they had to do anything in their power to preserve moistness.

In some ways, basting is one of those things that people think they need to do in order to be "cooking," like stirring a soup while it simmers, or flipping and re-flipping steaks or burgers on the grill. While it may appear to have a purpose,

some believe this is simply busywork, mainly a way for the cook to release nervous energy, and is not only unhelpful but actively hinders the production of good food.

The reality, of course, is that spilling a bit of fat or liquid over the surface of the roast has no effect on the moistness of the interior. A careful cook can achieve fine results when roasting meats by selecting good cuts with plenty of marbling, or when it comes to poultry, making sure the skin is dry and coated in fat. Of course, the best way to ensure your roast isn't dried out is to cook to the proper temperature and no longer.

Broiling Cooking Process

Broiling, cooking by exposing food to direct radiant heat, either on a grill over live coals or below a gas burner or electric coil. Broiling differs from roasting and baking in that the food is turned during the process so as to cook one side at a time. Temperatures are higher for broiling than for roasting; the broil indicator of a household range is typically set around 550 °F (288 °C), whereas larger commercial appliances broil between 700 and 1,000 °F (371 and 538 °C).

Fish, fowl, and most red meats are suitable for broiling. Steaks, popularly broiled over coals, can also be broiled in skillets or in the oven set on a seasoned wooden plank. In preparation of the entrée known as the London broil, or London mixed grill, flank steaks and other meats are garnished with vinegar, oil, and minced garlic before being placed on a rack and oven-broiled.



Broiling is a dry-heat cooking method that uses radiant heat from a source above the food that is to be cooked. If the food is placed on a grate over a broiler pan, then the fat can drip away and be discarded. The advantages of broiling are that food can be quickly broiled to doneness, and caramelization intensifies taste. A disadvantage of broiling is that more expensive (and richer) cuts of meat may be used, which may not retain heat well during service or at a buffet.

Broiling is a cooking process which involves the use of very high heat for a short period of time. In addition to producing food quickly, broiling is also used for low fat cooking. As a general rule of thumb, thinner cuts of meat are more suitable for broiling, to ensure that the meat is cooked all the way through. Meat, poultry, vegetables, and seafood can all be broiled.

There are two different types of broiling. One involves cooking the food in an oven which is set to a “broil” setting. The other is called pan broiling, and it takes places on the stovetop using dry, high heat. Both produce slightly different end products, especially pan broiling, which can sometimes be closer to sautéing than broiling. Broiling tends to produce a large amount of smoke, so it is important to do it in conditions with good ventilation.

To broil in an oven, most people use an oven with a separate broiler rack, usually located beneath the oven. The food being broiled is inserted, and the oven is turned to “broil.” Broiling directs intense heat at the food from directly above to quickly sear and cook it. The food may need to be turned if it is particularly thick, and it should be broiled in a sturdy cooking pan over a broiler tray.

To broil on the stovetop, a sturdy frying pan is used. The stove is adjusted to a high setting, which sears the meat when it is placed in the pan. As fat is produced, it is usually poured off. Thick foods should always be flipped to ensure that they are properly cooked.

Fermentation

Fermentation is an ancient technique of preserving food. The process is still used today to produce foods like wine, cheese, sauerkraut, yogurt, and kombucha. Fermented foods are rich in beneficial probiotics and have been associated with a range of health benefits — from better digestion to stronger immunity.

Fermentation is a natural process through which microorganisms like yeast and bacteria convert carbs — such as starch and sugar — into alcohol or acids. The alcohol or acids act as a natural preservative and give fermented foods a distinct zest and

tartness. Fermentation also promotes the growth of beneficial bacteria, known as **probiotics**.



Keyword

Probiotics are live bacteria and yeasts that are good for you, especially your digestive system. We usually think of these as germs that cause diseases.

Food fermentation is a food processing technology that utilizes the growth and metabolic activity of microorganisms for the stabilization and transformation of food materials. Fermentation was primarily developed for the stabilization of perishable agricultural produce. Notwithstanding, the technology has evolved beyond food preservation into a tool for creating desirable organoleptic, nutritional, and functional attributes in food products. Fermented food products still make up a significant portion of the diet in developing countries and the Far East, whereas that is no longer the case in the developed West. Nevertheless, there is a renewed interest in fermented food products in recent times mainly driven by the purported health benefits of such products. The current trend is set to continue into the future in light of the increasing prevalence of metabolic syndromes such as obesity, various food allergies, and intolerances (lactose intolerance, gluten intolerance, etc.); life style choices such as vegetarianism and veganism; and increasing interest by consumers in everything perceived natural and that promotes health and longevity.

There are many different types of fermented foods consumed around the world, including:

- Kefir
- Sauerkraut
- Tempeh

- Natto
- Cheese
- Kombucha
- Miso
- Kimchi
- Salami
- Yogurt
- Sourdough bread
- Beer
- Wine
- Olives

Smoking

Smoking is a method of cooking meat and other foods over a fire. Wood chips are added to the fire to give a smoky flavor to the food. Smoking is separate from drying. Smoking adds flavor to the meat, fish, and poultry, and provides a small food preservation effect. Frequently, hams, pork roasts, bacon, beef briskets, whole poultry, salmon, herring, and oysters are smoked.

Hot smoking is the process where meat is slowly cooked and smoked at the same time. In a smoker, the air temperature is increased and carefully controlled to raise the meat temperature to produce a fully-cooked food product. Frequently, meat, poultry, and fish are brined in a salt water solution to help the meat retain moisture during the smoking process.



Kitchen Essentials and Basic Food Preparation

The process of home hot smoking of meat poultry, and fish is done in a smoker. A smoker is an outdoor cooker designed for this purpose. It can also be done in a covered outdoor barbeque grill that has been adapted with a drip pan of water placed beneath the meat. The wood chips are put directly on the burning charcoal to create the smoke.

Liquid smoke is another way to add smoke flavor to fish and meat. There are two advantages to using liquid smoke. The first advantage is the amount of smoke flavor is completely controlled. The second advantage is the smoke flavor is immediate.

Since hot smoking is essentially a modified cooking technique, the primary food safety concern is the safe handling of meat, poultry, and fish. Michigan State University Extension recommends using only food grade contact surfaces for the utensils and smoker racks.



Only completely thawed meat, poultry, and fish should be smoked. The process of thawing the meat during the smoking process would allow the meat to be in the temperature danger zone of 40 to 140 degrees Fahrenheit. When marinating or brining the meat, this process should take place in the refrigerator. If partially cooked meat is to be smoked, the smoking needs to take place right after the cooking. Two thermometers need to be used during the smoking process. One thermometer measures the air temperature of the smoker. The other thermometer is used to monitor the food product temperature.

At the end of the smoking process, the meat and poultry should meet the same cooking temperatures as the traditional cooking methods. Beef and pork roasts must have a temperature of 145 Fahrenheit. Poultry needs to have a final temperature of

165 F, but hot-smoked fish must have a final temperature between 150 F to 160 F. This is higher than the traditional cooking temperature of 145 F.



The purpose of hot smoking is to slowly cook and add flavor to meat and poultry. Since smoking has only a partial food preservation effect, fully cooked products need to be handled just like freshly cooked meat. The final product needs to be served right away or refrigerated. To cool the meat quickly, large pieces need to be cut into smaller ones. The refrigerated smoked meat product has a refrigeration shelf life of three to four days. The freezer is the best option for long term storage of smoked meat, but the freezer shelf life is not as long as that of fresh cooked meat products.

To produce hot smoked fish requires brining, smoking, and cooking the fish to an internal temperature of 150 F for 30 minutes. To keep this food product it is necessary to refrigerate at a temperature below 38°F. It should be kept no longer than two weeks. For long-term storage, freeze the fish. The reason this is the best storage technique is because *Clostridium botulinum* **Type E, which is found in fish, will still grow at refrigerator temperatures.**

Smoking meat, fish, and poultry is one way to add flavor to the food product, but it has very little food preservation effect. To keep smoked meat, poultry, and fish safe, cook the meat product to recommended final temperatures to kill the **foodborne illness** pathogens.

Types of Smokers

Keyword

Foodborne illness is an infection or irritation of the gastrointestinal (GI) tract caused by food or beverages that contain harmful bacteria, parasites, viruses, or chemicals.

- **Electric smokers** use electricity to heat up a rod (or similar heating element), which then causes the wood to smoke. These are the easiest in terms of heat control since all you have to do is turn a dial to adjust the temperature. They also tend to be the most expensive, and they impart the least amount of smoked flavor compared to the other options.
- **Propane smokers** work almost exactly like electric smokers, but use a gas-fueled flame instead of a heating element to make the wood pellets smolder. These are pretty simple and might be a better choice for people in areas where electricity is expensive or scarce.
- **Charcoal smokers** are a favorite among barbecue masters, who believe that charcoal imbues more flavor compared to propane and electric. Charcoal smokers tend to be cheaper, but you also have to buy charcoal every time you want to smoke. Charcoal also requires you to start and maintain a fire without the help of modern technology.
- **Wood smokers** are definitely the way to go for the purest flavor, but they require the most attention and care out of all the options because they're harder to keep at a constant temperature. For this reason, we only recommend wood smokers after you've learned the basics.
- **Pellet smokers** are similar to wood smokers, but the wood has been condensed into convenient pellet form (hence the name). However, they are much easier to use. Instead of stacking firewood and babysitting the flame, you simply load the pellets into an oven-like compartment. The only downside? Like their electric brethren, pellet smokers tend to be expensive.

Roasting

Roasting refers to the process of a chemical reaction that is undertaken at a lower temperature compared to the melting of material, and is an important part of the preparation. Roasting can be divided into: oxidation roasting, salt roasting (includes

sulfuric acid roasting and chlorination roasting, magnetization roasting), reduction roasting, volatile roasting, and sintering roasting. According to the movement of the material in the roasting process, it is divided into fixed bed roasting, moving bed roasting, fluidized roasting, or floating roasting.

Roasting brings out the aroma and flavor that is locked inside the green coffee beans. Beans are stored green, a state in which they can be kept without loss of quality or taste. A green bean has none of the characteristics of a roasted bean -- it's soft and spongy to the bite and smells grassy.

Roasting causes chemical changes to take place as the beans are rapidly brought to very high temperatures. When they reach the peak of perfection, they are quickly cooled to stop the process. Roasted beans smell like coffee, and weigh less because the moisture has been roasted out. They are crunchy to the bite, ready to be ground and brewed. Once roasted, however, they should be used as quickly as possible before the fresh roast flavor begins to diminish.



Roasting of ores and concentrates can be defined as the heating of a material to cause reaction and the expelling of volatile matter without causing fusion. Oxidative roasting is used extensively to pretreat base and precious metal-bearing materials and to oxidize iron sulfides to generate sulfur dioxide for fixation with lime or sulfuric acid production. For the recovery of gold from refractory ores and concentrates, roasting has been used extensively for decades. Commercially, four important steps have been witnessed in the development of roaster equipment. The development of new technologies was driven by increased throughput requirements, improving efficiencies, reducing costs, and increasing environmental concerns. Oxygenated

roasting in fluidized beds also improves throughput per unit area as well as reducing the size of gas-cleaning equipment.

DID YOU KNOW ?

The beef on weck sandwich is a tradition in western New York dating back to the early 1800s. Roast beef is sometimes served with horseradish or horseradish sauce. In Denmark, it is mostly used in open sandwiches, called smørrebrød.

SCIENTIFIC METHODS OF FOOD PREPARATION AND SANITATION

Food preparation is much more than a science; it is an art: for it is linked with the total cultural pattern of people. Food preparation requires a sense of discrimination in the blending of flavors as well as of textures, colors and shapes. Food preparation, like any skill, requires a considerable amount of practice in order to achieve a high quality product with efficient use of time, money and material. The principles of food preparation are based upon the physical and chemical characteristics of the various food groups.

The following principles of cooking need to be borne in mind.

All foods must be cooked in a way which 'keeps the flavor in'. This ensures that the flavor or aroma of the food is retained. It stimulates the secretion of the digestive juices and aids in effective digestion and assimilation of foods. For example, the flavor of fish or vegetables may be retained by frying them with a protective covering of batter.

Sometimes the flavor of the food is 'drawn out' into the gravy or broth. This too aids digestion and brings about maximum absorption of nutrients. Meat when cooked over a slow heat produces an aroma which makes the broth more palatable.



The preservation of the maximum nutritive value can be ensured by using the correct methods of cooking, suited to the particular foods. For this, we need to know the effects of heat on different nutrients. Wet cooking breaks up the starch cells in food, making it softer and more accessible to starch-splitting enzymes. Starch gelatinizes at a temperature below the boiling point of water. Dry heat converts starches into dextrin, a midway product between starch and sugar. Sugar when heated melts in its own water of crystallization. It is converted first into barley sugar and then into caramel sugar, both of which have entirely different properties in comparison with the first sugar used.

The different proteins present in meat are collagen in connective tissue, fibrin in blood clot, and myosin found in muscle fiber. Milk protein is known as caesinogen, while legumin is found in pulses. Wheat protein, gluten, is a mixture of two proteins-gliadin and glutenin. These when mixed with water give the characteristic stickiness to dough. The proteins found in rice, barley and maize are known as oryzenin, hordenin and zein respectively. Albumin forms the major protein content of egg and has the highest biological value.

Proteins get coagulated by both dry and wet methods of cooking. They are changed into gelatin on moderate heating. Gelatin is soluble in water and is conveniently absorbed. Proteins tend to harden, shrink and become indigestible when heated strongly, as is seen in hardboiled eggs and roasted meat.

Fats are not generally much affected by heat. Partial decomposition may take place if they are subjected to very high temperatures for a really long time. The fatty substances thus produced have an acrid odor and irritate the digestive tract.

There are several reasons for cooking food

- Cooking improves the flavor and palatability of foods, e.g. meat and potatoes. The use of moderate amounts of spices and condiments adds taste and stimulates the flow of digestive juices.
- Cooking brings about physical and chemical changes in the food whereby color, texture and appearance may be improved. This increases palatability, acceptability and the digestibility of the food.
- The same food cooked in different ways provides variety in the diet. For example potatoes may be eaten in many forms-boiled, baked, fried, in parathas, mixed with other vegetables in cutlets-to avoid monotony.
- The cooking of food makes it more digestible. It softens the food making it easily chewed, masticated and digested without undue strain on the digestive system. Cooking makes raw rice, pulses and meats more digestible.
- Cooking enhances the availability of some nutrients. For example, trypsin inhibitor present in protein foods is destroyed by cooking. This makes the

trypsin freely available to the body. Similarly, starch is more easily available to the body after cooking.

- Cooking destroys bacteria, thus making the food safe for consumption. This also improves the keeping quality of the food. Boiling sterilizes milk to some extent, making it safe to drink. Boiled milk can also be kept for a longer time without getting spoilt.

REMEMBER

Vitamins C and B are heat-labile and are destroyed by heat. The fat-soluble vitamins are only destroyed at a very high temperature. Substantial loss of minerals occurs when foods are cooked in large quantities of water. This loss is further increased if the water is thrown away after cooking vegetables and other foods.

Cooking Procedures

People tend to eat the same types of foods most of the time, but this does not mean they cannot enjoy variety. There are a number of common cooking techniques such as baking, frying, and grilling. With many foods, if you change the method, you can change the outcome of a single item.

Take eggs as an example. There are several cooking techniques people use to prepare them. Some people eat their eggs scrambled. This method involves cracking the eggs into a container and whipping them before pouring them into a hot greased pan. As they cook, they are agitated so they become scrambled. Other people poach their eggs by cracking them and allowing the interior to fall into boiling water.

Eggs are far from being the only food that can be prepared with multiple cooking techniques. Meats and vegetables can also be prepared in different ways. One common method of cooking both of these is by frying. Furthermore, there are several frying methods and each can change how a product turns out.

The first method in this category is pan frying. This usually involves battering or seasoning the food before it is cooked. Once this is done, it is placed in a shallow pool of hot cooking oil. Deep frying is similar but it requires enough cooking oil to submerge the food. There is also sautéing, which may seem similar to pan frying, but this method requires minimal oil, high heat, and a lot of movement of the food.

Grilling is a cooking technique that involves placing food onto a grill that may be heated by gas, charcoal, or electric. Preparing food in this manner usually results in a striped imprint being left on the food. Although grilling is considered a summertime favorite in many places, it has become the subject



of debate since some health experts believe that char-grilled food may be carcinogenic.



Some cooking techniques require the use of an oven, which is an enclosed compartment that generally has adjustable heat. One oven cooking method is baking. There are a lot of foods that can be prepared this way, such as pastries, meats, and casseroles. Another oven cooking method is broiling.

Although these two methods use the same compartment, they are different. Baking uses encompassing heat to cook items. Broiling uses the close range radiation from the oven's heating implement to cook.

Food Preparation Skills

During food preparation or manufacturing, depending on the desired final food product, other substances are added to the starch system and can interact with and influence its physical properties due to changes in the phase transitions of starch. On occasion, different substances could be added, e.g., extra water, acids for food preservation and flavoring, sugars and sweeteners to increase the solid content, control sweetness or generate a desired color, in addition to mimicking fat properties. Salts like sodium, calcium, and potassium phosphate or chloride can be added to create unique structures to enhance mouth feel properties and provide stability during storage. Food ingredients like spices, fruits, or flavors contribute to the solid content and enhance flavor, but occasionally some of them contain enzymes like α -amylase, e.g., peppers, smoke flavors, pineapple, blueberries, and blue cheese. Besides these, protein, lipids, and non-starch polysaccharides could also be added into the starch system for specific reasons. Special attention should be paid to the substance's quality, e.g., presence of chlorine, minerals, and salts in water.

Food Preparation and Cooking Skills: Challenges & Implications

Regardless of the perspective from which the issue is viewed, a decline in cooking and food preparation skills has been noted within the popular and published literature for some time, with only limited quantifiable data to support this trend. Several initiatives report cross-sectional data, however, longitudinal or surveillance data is lacking which would enable trends in cooking and food preparation skills within and across population subgroups to be monitored and reported.

In cases where data does exist, the lack of use of a definition of cooking skills and the use of inconsistent definitions across research initiatives, differing methodologies and differing indicators limits comparisons. Several authors argue that the often assumed definitions need to evolve from a perceived “Golden Age” of cooking (specifically post World War II when basic commodities and technology were limited thus requiring enhanced knowledge and skill) to reflect the current food and social/societal contexts. Short contends that modern cooking incorporates greater skills in timing, planning, judgment and organization in addition to traditional cooking abilities and use of techniques, often described as being largely mechanical and practical.

“At an individual and household level, food skills are a complex, inter-related, person-centered, set of skills that are necessary to provide and prepare safe, nutritious, and culturally acceptable meals for all members of one’s household.”

Food skills include:

- Knowledge (i.e. about food, nutrition, label reading, food safety, ingredient substitution)
- Planning (i.e. organizing meals, food preparation on a budget, teaching food skills to children)
- Conceptualizing food (i.e. creative use of leftovers, adjusting recipes)
- Mechanical techniques (i.e. preparing meals, chopping/mixing, cooking, following recipes)
- Food Perception (i.e. using your senses- texture, taste, when foods are cooked)”

Implications of a Transition in Cooking and Food Preparation Skills

The specific implications of a transition in cooking and food preparation skills are difficult to assess given the lack of concrete data detailing that a transition, specifically deskilling, has taken place. However, the research presented generally reports respondents’ self-perceived general satisfaction with their cooking and food preparation skills. This finding is presented alongside evidence demonstrating that decisions are being made not to use these skills, presuming a definition of basic,

traditional or 'from scratch' cooking, for a variety of reasons. What is clear and supported by both research and food purchasing and consumption data, nationally and internationally, is that food choice and consumption patterns have transitioned with increased processed, pre-prepared and convenience foods being purchased, 'assembled' and consumed across population subgroups on a daily basis. Related to this normalization is the potential lack of transference of basic, traditional or 'from scratch' cooking and food preparation skills from parents (primarily mothers) to children and adolescents, which has traditionally been the primary mode of learning. Without the opportunity to observe and practice basic or 'from scratch' cooking and food preparation skills within the home environment, many argue that children and adolescents will not be equipped with the necessary skills to make informed choices within an increasingly complex food environment. In support of this argument, low self-efficacy and self-perceived inadequate cooking and food preparation skills have been identified as barriers to food choice within several recent research initiatives, potentially resulting in a greater reliance on pre-prepared or convenience foods, reduced variety in food choice and consumption and the atrophy of cooking and food preparation skills. While the gap is narrowing between the prices of pre-prepared foods and whole/raw foods, healthier pre-prepared or convenience foods tend to cost more. Although not completely substantiated by research, several authors suggest that the implications of the culinary transition on food choice and potentially, dietary quality, are not likely consistent across socio-economic groups or gradients. Those from more affluent groups can afford to essentially 'buy their way out of' the health and social implications through the purchase of healthier pre-prepared foods and meals.

Some evidence does exist demonstrating a relationship between decreased use of traditional or basic food preparation skills, increased consumption of pre-prepared, packaged and convenience foods and dietary quality. That being said, several authors point out that the information is limited to substantiate a direct relationship between cooking and food preparation skills and health. While the results of interventions may be quite moderate, Some studies do indicate that food skills interventions may be a useful starting point for initiating dietary change, while recognizing that addressing any one barrier to change (i.e. in isolation of others or a broader context) is unlikely to radically alter established eating behaviors, particularly among adults.

Cuisine Preparation

Cuisine, the foods and methods of preparation traditional to a region or population. The major factors shaping a cuisine are climate, which in large measure determines the native raw materials that are available to the cook; economic conditions, which regulate trade in delicacies and imported foodstuffs; and religious or sumptuary laws, under which certain foods are required or proscribed.

Climate also affects the supply of fuel; the characteristic Chinese food preparation methods, in which food is cut into small pieces before being cooked, was shaped primarily by the need to cook food quickly to conserve scarce firewood and charcoal. Foods preserved for winter consumption by smoking, curing, and pickling have remained important in world cuisines for their altered gustatory properties even when these preserving techniques are no longer strictly necessary to the maintenance of an adequate food supply.

World cuisine is traditionally divided into regions according to the common use of major foodstuffs, especially grains and cooking fats. In Central and South America, corn (maize), both fresh and dried, is the staple. In northern Europe, wheat, rye, and fats of animal origin predominate, while in southern Europe olive oil is ubiquitous and rice becomes important. In Italy the cuisine of the north, featuring butter and rice, stands in contrast to that of the south, with its wheat pasta and olive oil. China likewise can be divided into rice regions and noodle regions. Throughout the Middle East and Mediterranean there is a common thread marking the use of lamb, olive oil, lemons, peppers, and rice. The vegetarianism practiced in much of India has made pulses such as **chickpeas** and lentils as important as wheat or rice. From India to Indonesia the lavish use of spices is characteristic; coconuts and seafood are used throughout the region both as foodstuffs and as seasonings.

The use of staple foods cuts across economic and class distinctions. Even where the contrast between the haute cuisine of the professional chef and the simple fare of home cooking is marked, food preferences constitute a unifying factor in regional culture.

Ways to Meal Preparation

Meal prepping is the concept of preparing whole meals or dishes ahead of schedule. It's particularly popular amongst busy people because it can save a lot of time. Having pre-prepared meals on hand can also reduce portion size and help you reach your nutrition goals. This way, you'll avoid unhealthy options like TV dinners or takeout, especially when you're overwhelmed or exhausted. And since it requires you to determine what to eat ahead of time, meal prepping can lead to more nutritious meal choices over the long term. Despite what people may think, there are various ways to meal prep — not all of which involve spending a whole Sunday afternoon cooking dishes for the week to come. You can choose methods that work best for you.

You may think that cooking meals for the week ahead will consume a big chunk of your weekend. However, because there are various ways to meal prep, you don't have to stand in the kitchen for an entire Sunday afternoon. Everyone can find a suitable meal preparation style.

The most popular ways to meal-prep include:

- **Make-ahead meals:** Full meals cooked in advance which can be refrigerated and reheated at mealtimes. This is particularly handy for dinnertime meals.
- **Batch cooking:** Making large batches of a specific recipe, then splitting it into individual portions to be frozen and eaten over the next few months. These make for popular warm lunch or dinner options.
- **Individually portioned meals:** Preparing fresh meals and portioning them into individual grab-and-go portions to be refrigerated and eaten over the next few days. This is particularly handy for quick lunches.
- **Ready-to-cook ingredients:** Prepping the ingredients required for specific meals ahead of time as a way to cut down on cooking time in the kitchen.

The method that will work best for you depends on your goals and daily routine.

For instance, make-ahead breakfasts might work best if you're looking to streamline your morning routine. On the other hand, keeping batch-cooked meals in your freezer is particularly handy for those who have limited time in the evenings.

The different meal-prepping methods can also be mixed and matched depending on your own circumstances. Start by choosing the most appealing method, then slowly experiment with the others to determine what suits you best.

Picking the Right Storage Containers

Your food storage containers can make the difference between a fabulous or mediocre meal.

Here are some container recommendations:

- **Airtight containers for ready-to-cook ingredients:** Washable, reusable silicone baggies and stainless steel containers are great for keeping ingredients crisp and foods fresh.
- **BPA-free microwavable containers:** These are both convenient and better for your health. Pyrex glassware

Keyword

Chickpea is a key ingredient in hummus and Chana masala, and it can be ground into flour to make falafel.

or collapsible silicone containers are some good options.

- **Freezer-safe containers:** These will limit freezer burn and nutrient losses. Wide-mouth mason jars are ideal, as long as you leave at least 1 inch (2.5 cm) of headspace so food can expand as it freezes.
- **Leak-proof, compartmentalized containers:** These are great for lunches or meals which require ingredients to be mixed at the last minute. One good example is bento lunch boxes.

Stackable or similarly shaped containers will help optimize the space in your refrigerator, freezer or workbag.

Cooking, Storing and Reheating Foods Safely

Food safety is an important yet overlooked component of meal prepping.

Cooking, storing and reheating foods at the right temperature can prevent food poisoning, which affects an estimated 9.4 million Americans each year.

Here are some government-approved food safety guidelines:

- **Be mindful of proper temperatures:** Make sure your refrigerator is kept at 40°F (5°C) or below and your freezer at 0°F (-18°C) or below.
- **Cool foods quickly:** Always refrigerate fresh foods and meals within two hours of purchase or cooking. For quick cooling, spread out cooked foods in shallow containers and immediately place in your refrigerator.
- **Keep storage times in mind:** Cook fresh meat, poultry and fish within two days of purchase and red meat within 3–5 days. In the meantime, keep them on the bottom shelf of your refrigerator.
- **Cook at the right temperatures:** Meats should be cooked until they reach an internal temperature of at least 165°F (75°C), as this kills most bacteria.
- **Thaw foods safely:** Thaw frozen foods or meals in your refrigerator instead of on your countertop. For faster thawing, submerge foods in cold tap water, changing the water every 30 minutes.
- **Reheat foods only once:** The more times you cool and reheat a food, the higher the risk of food poisoning. That's why defrosted foods should only be reheated once.
- **Reheat foods at the right temperature:** All meals should be reheated to 165°F (75°C) before being eaten. Frozen meals should be reheated and eaten within 24 hours of defrosting.

- **Use labels:** Remember to label and date your containers so that you can consume foods within the food-safe period.
- **Eat foods within the right time period:** Refrigerated meals should be consumed within 3–4 days and frozen meals within 3–6 months.

Steps to a Successful Meal Prep

Prepping a week's worth of meals can sound daunting, especially for first-timers. But it doesn't have to be hard.

Below, you'll find a simple step-by-step guide to streamline your meal prepping process.

- **Select your meal prep method of choice:** This can also be a combination of methods and should be based on your lifestyle and nutrition goals.
- **Stick to a schedule:** Pick one day each week to do your meal planning, shop for groceries and cook.
- **Pick the right number of meals:** Bear in mind your calendar and the restaurant meals you've planned for the week.
- **Select the right recipes:** Keep an eye out for variety and preparation methods. When starting out, stick to recipes you already know.
- **Reduce the time you spend on grocery shopping:** Make a grocery list organized by supermarket departments or shop for groceries online.
- **Spend less time in the kitchen:** Choose which meals to cook first based on cook times.
- **Store your meals:** Use safe cooling methods and appropriate containers. Refrigerate meals you're planning to eat within 3–4 days, then label and freeze the rest.

Changes in Food during Preparation-Color, Texture and Flavor

However, nutritious a meal is, it needs to be attractive in appearance and flavor if it is to be eaten and the nutrients made use of. It must stimulate the appetite. The art of food preparation is the art of skilful combination of color, texture and flavor to please the eyes, the nose and the palate.

Color. Food undergoes many color changes during cooking, some of which enhance the desirability of the product whereas others do not. Fruits and vegetables have attractive colors but during cooking, the color is changed due to the pH of the cooking medium. Chlorophyll, the green pigment of the plant foods is affected due to heat. The green color of the leafy vegetables is changed to olive green and then to

brown in the long run, especially when an acid medium is used. Sometimes baking soda (alkali) is used to maintain the green color, but it destroys the Vitamin C and thiamine content of the food. It is advisable to maintain the good color by cooking the green leafy vegetables in an uncovered utensil or leaving the pan uncovered for the first few minutes of cooking.

Carotenoids, the red pigments present in peaches and carrots, leach out into the cooking medium making the food look pale in appearance. The color remains red in a slightly acid medium but turns blue, in an alkaline medium. The important feature of the carotenoids is that they are organic compounds with unsaturated chains. This property is destroyed by oxidation in air or hydrogenation.

Oxidation is responsible for loss in color. During the ageing of kneaded flour or bleaching by oxidizing agents, the color is bleached producing white flour which in turn makes the bread white. The linkage of certain amino acids in flour with sugar forms brown crusts on bread and cakes after heating-dextrinization. Dextrin is a midway product between starch and sugar.

The pale yellow color of onions, asparagus and apple is due to flavonoid pigments. Alkaline tap water is liable to cause them to turn into a deep yellow-brown color on cooking which can be prevented by adding an acid such as cream of tartar or a little lemon juice. Yellowing of rice can also be prevented in this way.

The color of meat is due to a red pigment in muscle called myoglobin and also due to blood pigment called hemoglobin. The red color of meat is changed to pink, grey, or brown upon exposure to heat.

Texture: Some people are very sensitive to the texture or physical state of the food they eat. One gets irritated when one comes across grains of sand stones or pebbles or any uncooked food particles under the teeth. Raw food will go through many processes or stages during preparation. The food is cleaned and cooked before it is consumed. Proteins coagulate on heating; egg white coagulates and becomes solid when heated. When milk is heated a scum is formed on cooling; this is due to the protein coagulation. The addition of citric acid in hot milk coagulates it very fast by separating casein, the protein part of milk. Coagulation is better at low temperature. Overheating makes the substance stringy and tough.

Not all proteins coagulate on heating. Collagen and elastin, the two important insoluble proteins in meat, become tough on cooking by heat; so in order to make the connective tissues of meat tender, the meat should be cooked by moist heat.

The texture of cereals, fruits and vegetables is related to the cellulose fibers. The cellulose becomes soft on cooking but loses its shape on overcooking. In case of cereals cooking gelatinizes the starch, softens and breaks down the cellulose framework of the plant. When starch is cooked using by dry heat, it darkens in color as the starch

is converted into dextrins which are more easily digested than starch.

However, excessive heating causes starch to char. These changes can be observed during the toasting of bread. If starchy food is cooked by moist heat, grains absorb moisture and swell and burst or gelatinize and a thickish paste is obtained. It is because of this that maida, cornflour or flour is used as a thickening agent. When sugar is cooked by using dry heat it melts and becomes dark brown in color and is known as caramel. On further heating it chars and burns.

The use of fats brings tenderness in texture. The quality of cakes and biscuits is adjudged by their texture. Fat increases the fermenting Power of baking powder in the cake batter and improves the final tenderness. It gives strength to the batter and decreases its tendency to collapse under its own weight before gluten and egg-white (both proteins) set. Fat also prevents the formation of a continuous gluten system and produces a low breaking strength which is known as shortening power. This makes the cakes and biscuits easy to bite.

Flavor: Cooking not only improves the color and texture of foods but brings out new flavors. Flavor is sensed by taste and smell, the two important sense organs of the. Good flavored food encourages formation of saliva in the mouth which is helpful in digesting food. However ill-cooked or overcooked food loses its natural flavor as well as taste. Physical and chemical changes are responsible for the changes in flavor which are brought about during cooking processes.

The roasting and grinding of coffee seeds produces a change in the flavor. Raw meat and fish always have an unfavorable flavor judging by the smell and taste; but the odorous components of the food are lost on heating. Spices and essences are used in cooking to improve the flavor. It is better to use these ingredients as late as possible with minimum heating to conserve the essential oils. Highly flavored foods should be wrapped in aluminum foil to retain the maximum inherent flavor, which is lost when it is cooked unwrapped.

Keyword

Carotenoids are a group of natural pigments with many attributed health benefits when consumed in sufficient levels, some of which also exhibit pro-vitamin A activity.

Chef Role and Responsibilities

At their highest levels, professional chefs may also be called head cooks because they manage the kitchens in which they work. They oversee subordinate cooks and kitchen staff, and prepare menu items themselves. Their days may regularly last 12 hours and can include early mornings, late evenings, weekends and holidays.

The primary responsibility of a chef is to plan menus, develop recipes, and engage in and supervise the preparation of dishes. They order supplies, accept their deliveries in the morning, and check for their freshness and taste. Cleanliness is vital to kitchens for health and safety reasons, so chefs maintain sanitation practices and ensure that all health laws are followed. They also hire, train and, if necessary, fire cooks and other food-preparation workers. Chefs who own restaurants also have marketing and administrative responsibilities, and may use software to help with management duties.

An eating establishment may have different types of chefs. Executive chef or chefs de cuisine oversee kitchen operations by managing the work of cooks who actually do meal preparation. They may spend most of their time in administration and do very little in the kitchen. Next in line are sous chefs, who manage cooks, do some meal preparation and report to head chefs. Personal chefs prepare meals in private homes by ordering groceries, serving food and washing dishes. They may be self-employed and have several clients. Private household chefs work full-time for one client, such as a diplomat or top executive who regular entertains as part of his official duties.

Most chefs receive their training by starting in other kitchen positions, such as dishwasher or line cook. They learn their skills over several years from other chefs, before they are promoted to higher levels. However, formal training is also available in community colleges or culinary arts schools that can last up to four years. These programs help students gain hands-on experience in planning menus, sanitizing equipment and purchasing supplies. Most programs also require students to intern or apprentice in a commercial kitchen. Formal apprenticeship programs generally last about two years, and combine classroom and on-the-job training.

Chefs earned a mean \$46,600 per year, or \$22.40 per hour, as of May 2011, states the Bureau of Labor Statistics. Their annual salaries ranged from below \$24,770 to over \$74,060 a year. Almost half of the 90,300 worked in full-service restaurants to earn \$44,870 yearly. However, the highest pay was in the category of deep sea, coastal and Great Lakes water transportation, at a mean \$73,0100 per year. Chefs are predicted to lose jobs at the rate of 1 percent from 2010 to 2020, compared to the predicted 14 percent increase for all jobs in all industries. Although population growth

will increase the demand for chefs at dining establishments, many restaurants are cutting costs by using lower-level cooks to perform many chef duties.

Maintain Workplace Sanitation

Maintaining a clean work environment is critical in preventing foodborne illness. Bacteria can grow on unsanitary surfaces and then contaminate food. Just because a work surface looks clean does not mean that it is sanitary. Always ensure that you clean and sanitize a work area before starting to prepare food.

Cleaning Procedures and Schedules

Cleaning with soap and other detergents is just one step of the cleaning procedure. It is also necessary to sanitize. Cleaning will remove any dirt or grease, but will not necessarily kill any bacteria or other pathogens. Only a sanitizer will kill bacteria and ensure the area is safe for food preparation. Leading sanitizers used in the food service industry are chlorine solutions (bleach), quaternary solutions (quats), and iodine. Use these materials according to the manufacturer's instructions that accompany the product and that are found on the **material safety data sheet (MSDS)** using the appropriate personal protective equipment.

A sanitation plan is important in any food service preparation area. It ensures that all surfaces are cleaned on a regular basis and reduces the risks of transferring bacteria or other pathogens from an unclean surface to clean equipment such as cutting boards or tools. A sanitation plan has two components:

- A list of cleaning and sanitizing agents or supplies with instructions on their safe use and storage
- A cleaning schedule, outlining how each item needs to be cleaned, who is responsible, and how frequently it happens

Table 1 shows a sample daily and weekly cleaning schedule for a restaurant.

Keyword

Material Safety Data Sheet (MSDS) is a document that contains information on the potential hazards (health, fire, reactivity and environmental) and how to work safely with the chemical product.

Kitchen Essentials and Basic Food Preparation

Table 1. Sample Cleaning Schedule

Daily Cleaning Schedule. Date: _____				
Item	Frequency	Method	Responsibility	Supervisor initial
Upright mixer	<ul style="list-style-type: none"> Prior to use if mixer not used in previous 2 hours Immediately after use when finished task 	<ol style="list-style-type: none"> Lock out machine (unplug) and remove attachments and bowl. Send through dishwasher. Wash down all surfaces with a clean cloth immersed in clean warm water and detergent. Wipe down all surfaces with a second clean cloth immersed in sanitizing solution (100 ppm chlorine or 28 mL bleach per 4.5 L water). Allow to air dry prior to reassembly and next use. 	Pastry cooks	_____
Meat slicer	<ul style="list-style-type: none"> Prior to use if slicer not used in previous 2 hours Immediately after use when finished task 	<ol style="list-style-type: none"> Lock out machine (unplug) and set slicer to zero. Remove blade guard. Send through dishwasher. Carefully wash down all surfaces with a clean cloth immersed in clean warm water and detergent. Carefully wipe down all surfaces with a second clean cloth immersed in sanitizing solution (100 ppm chlorine or 28 mL bleach per 4.5 L water). Allow air dry prior to reassembly and next use. 	Garde manger	_____
Weekly Cleaning Schedule. Date: _____				

Item	Frequency	Method	Responsibility	Supervisor initial
Dry storage	Monday after dinner service	<ol style="list-style-type: none"> 1. Remove food from shelves one shelf at a time. Store rolling rack in dry storage while cleaning shelf in place. 2. Wash down all surfaces with a clean cloth immersed in clean warm water and detergent. 3. Wipe down all surfaces with a second clean cloth immersed in sanitizing solution (100 ppm chlorine or 28 mL bleach per 4.5 L water). 4. Allow to air dry prior to replacing food on shelves. 	Grill cook	_____
Reach-in freezer	Tuesday after dinner service	<ol style="list-style-type: none"> 1. Remove food from shelves one shelf at a time. Store rolling rack in cooler while cleaning shelf in place. 2. Wash down all surfaces with a clean cloth immersed in clean warm water and detergent. 3. Wipe down all surfaces with a second clean cloth immersed in sanitizing solution (100 ppm chlorine or 28 mL bleach per 4.5 L water). 4. Allow to air dry prior to replacing food on shelves. 	Garde manger	_____

Dishwashing Procedures

Effective dishwashing ensures that all equipment is sanitary and ready for use when required. Using soiled or dirty china is not only dangerous, but it will tell customers that the operator as little or no regard for customer safety.

Before washing, scrape dishes and pre-soak any items with hard to remove residue. Then follow the procedure in Table 2, depending on whether you are using a high- or low-temperature dishwasher or you are washing dishes manually.

Table 2. Dishwashing procedures

Step	Manual	High-temperature dishwasher	Low-temperature dishwasher or glass washer
Wash	Use a commercial detergent and 45°C (113°F) water.	Wash cycle must reach at least 60°C (140°F).	Wash cycle must reach at least 60°C (140°F).
Rinse	Rinse in clean hot water.	Hot rinse cycle.	Warm or cold rinse cycle with sanitizer.
Sanitize	Sanitize for 2 minutes with an approved sanitizing solution (50 ppm chlorine or 12.5 ppm iodine).	Rinse cycle must reach at least 82°C (180°F) for at least 10 seconds.	Final rinse must have concentration of 50 ppm chlorine or 12.5 ppm iodine.
Dry	Drain boards should be sanitized and sloped for drainage. Never towel dry.	Drain boards should be sanitized and sloped for drainage Never towel dry.	Drain boards should be sanitized and sloped for drainage Never towel dry.

Routine Equipment Maintenance

Most kitchen equipment is intended to be disassembled for cleaning. Refer to the manufacturer's instructions and training provided by your employer or instructor on how to do this safely. Some equipment is intended to be cleaned in place. This should be identified in your sanitation plan and cleaning schedule.

All equipment must be routinely cleaned and inspected. Older equipment may have nooks and crannies where dirt and bacteria can hide, which can be difficult to clean effectively. Proper cleaning procedures must be established and followed at all times with regular review to ensure that procedures are working. If equipment is replaced or cleaning materials change, the process may have to be adjusted. If you notice any safety concerns with the equipment while cleaning it, such as a frayed cord, missing guard or loose parts, let your supervisor know immediately.

Importance of Personal Hygiene

It is imperative for safe food-handling outcomes for all workers to be familiar with standard sanitation and hygiene practices. Figure 1 shows the cycles of transmission of micro-organisms. One of the basic principles is to break the cycle by avoiding cross-contamination, which can be achieved by ensuring **personal hygiene** practices are followed.

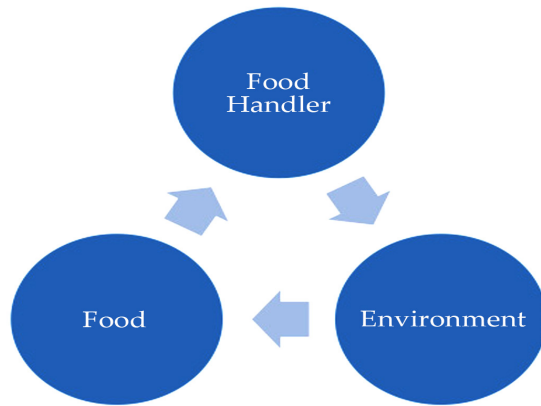


Figure 1. The cycle of bacterial transmission.

Proper personal hygiene is critical in any food service premise. Personal hygiene includes:

- Showering and bathing regularly
- Keeping hair clean and covered or tied back
- Keeping clean clothing and footwear that is used only at work
- Handwashing regularly
- Using clean utensils for tasting food
- Using separate cloths for cleaning and wiping plates

Handwashing

Proper and regular handwashing is a critical part of any food safety system. You must always wash your hands after:

- Sneezing, coughing, or touching your mouth or nose
- Using the bathroom
- Smoking or using toothpicks
- Handling raw foods
- Cleaning and wiping tables, food preparation surfaces, or equipment
- Handling soiled objects, garbage, or money

The steps for proper handwashing are as follows:

- Wet hands with warm water.

Keyword

Personal hygiene can be defined as an act of maintaining cleanliness and grooming of the external body.

REMEMBER

Food processors should understand the composition of their foods because it enables them to predict the changes that take place during processing, the expected shelf life of the product and the types of microorganisms that can grow in it.

Kitchen Essentials and Basic Food Preparation

- Apply liquid soap and lather for at least 20 to 30 seconds.
- Scrub backs of hands, wrists, all fingers, and under nails.
- Rinse under running water, pointing down toward the drain.
- Dry with a paper towel.
- Turn off taps and open bathroom door using the paper towel.

ROLE MODEL

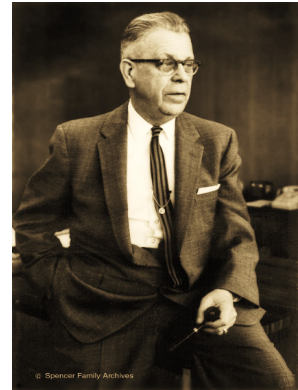
PERCY LEBARON SPENCER: AN AMERICAN PHYSICIST AND INVENTOR. HE BECAME KNOWN AS THE INVENTOR OF THE MICROWAVE OVEN.

BIOGRAPHY

Percy Lebaron Spencer was an American inventor best known as the inventor of the microwave. Spencer was born in Howland, Maine in 1894. His father passed away when he was still a toddler and he was abandoned by his mother soon after. Spencer was brought up by his poverty-stricken uncle and aunt, who barely had enough to get by themselves. He was a curious child and once spent days exploring a log hauler truck that broke down in front of his house, trying to figure out how it worked. Spencer's uncle died when he was seven years old, which made him the head of the family at a very early age. Soon after he left school to earn a living and support himself and his aunt.

Between the ages of 12 and 16 he worked at a spool mill. Then he heard about an opening at a paper factory that was going to be run on electricity. This was a new concept in the remote town where he lived, so he learned as much as he could about it and applied for the job of wiring the plant. Spencer was one of three people who got selected for the job, despite the fact that he had received no formal education or training in the field. At the age of 18, he joined the U.S. Navy and where he learnt all he could about wireless and radio technology. Spencer was strongly motivated to learn and gained expertise in a number of fields such as trigonometry, calculus, chemistry, physics, and metallurgy by reading extensively about them.

Spencer was also an expert in radar tube design, and worked at a company called Raytheon as the chief of the power tube division. His expertise helped the company win a major contract from the U.S. government to produce magnetrons for radar equipments which was invaluable in the second world war. Under his leadership, the division expanded from a mere 15 employees to more than 5000 employees and productivity was



also largely improved. His invention of the microwave cooking was purely coincidental, though. One day while working at the plant, he crossed an active radar set when he noticed that the candy in his pocket had suddenly melted. His always active sense of curiosity was heightened and he decided to experiment further by testing out different types of food such as unpopped kernels of corn. To his surprise and delight, they began to pop. Unlike others who had experienced the same, Spencer was keen to learn more about it.

After researching further and conducting more experiments, Percy Spencer filed for and successfully received a patent in 1945. In 1947, he produced the first commercially built microwave which was between 5 and a half to 6 feet tall and weighed around 750 lbs. It cost between \$2000 to \$3000 and was initially used in restaurants, railways and ships as they were too bulky and expensive for home use. It also had some shortcomings; for instance, meat would not cook properly in it. After further research and modification in design, the first microwave for home use was developed in 1967. It cost \$495 and could be fit on a kitchen counter top.

In all, Spencer held more than 300 patents in his lifetime including those received at Raytheon where he eventually became a senior member of the Board of Directors. His notable awards include a Distinguished Public Service Award, a membership of the Institute of Radio Engineers, Fellowship of the American Academy of Arts and Sciences, and an honorary Doctor of Science from the University of Massachusetts. He died in 1970 at the age of 77.

SUMMARY

- People process foods every day when preparing meals to feed their families. However, the term “food processing” is broader than preparing and cooking foods. It involves applying scientific and technological principles to preserve foods by slowing down or stopping the natural processes of decay.
- Fried foods, though widely considered indelicate, are also among the most ephemeral.
- Aluminum foil and other metal items should never be put in a microwave. Always use a container labelled “microwave safe” to avoid toxins in foods.
- The phenomenon of fermentation, with the resultant lightening of the loaf structure and development of appealing flavors, was probably first observed when dough’s or gruels, held for several hours before baking, exhibited spoilage caused by yeasts.
- The cooking juices in the pan, melted butter, a marinade, or other sauces are either brushed on the meat, or sucked from the pan into the turkey baster and squeezed out over the meat.
- A careful cook can achieve fine results when roasting meats by selecting good cuts with plenty of marbling, or when it comes to poultry, making sure the skin is dry and coated in fat.
- Roasting can be divided into: oxidation roasting, salt roasting (includes sulfuric acid roasting and chlorination roasting, magnetization roasting), reduction roasting, volatile roasting, and sintering roasting.

MULTIPLE CHOICE QUESTIONS

1. **Compounds which are needed in very small amount but their deficiency lead to scurvy and rickets are**
 - a. vitamins
 - b. proteins
 - c. carbohydrates
 - d. fats
2. **Which of the following is an advantage of food processing?**
 - a. Availability of seasonal food throughout the year
 - b. Removal of toxins and preserving food for longer
 - c. Adds extra nutrients to some food items
 - d. All of the mentioned
3. **Which of the following is a performance parameter for the food industry?**
 - a. Hygiene
 - b. Labor Used
 - c. Hygiene & Labor Used
 - d. None of the mentioned
4. **Certain traditional thermal processing techniques affect the nutritional properties of food.**
 - a. True
 - b. False
5. **Energy which is stored in food that we eat is only released in cells of body by process of**
 - a. Respiration
 - b. Digestion
 - c. Excretion
 - d. Elimination
6. **The biggest processing segment under food processing is the meat, poultry, vegetables and oil industry.**
 - a. True
 - b. False
7. **Which of the following are NOT key constraints of the food processing industry?**
 - a. Inadequate quality control
 - b. High packaging cost

- c. Low demand
- d. Poor infrastructure as in no cold storage, warehouse etc

REVIEW QUESTIONS

1. Explain the methods of frying.
2. Determine the food baking techniques.
3. Discuss on food preparation skills
4. Identify the importance ways for meal preparation
5. Write the changes in food during preparation-color, texture and flavor.

Answer to Multiple Choice Questions

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (a) | 2. (d) | 3. (c) | 4. (a) | 5. (a) |
| 6. (a) | 7. (c) | | | |

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CHAPTER 3

KITCHEN AND FOOD SERVICE AREA

INTRODUCTION

Food and beverage outlets are the areas in a hotel where food and beverages are sold to both in-house and outside guests.

In any establishment a guest's first impression on entering the service area is of great importance. A guest can be won or lost on these impressions alone. There are many service areas behind the scene or what may be termed as back of the house which is required to be efficiently run, well organized, supervised and well stocked with appropriate equipments depending on the style of operation.

Food Pick up Area is the area that connects the Kitchen to the Restaurant from the back-side. This area is an inter link between the Kitchen staff and Service staff and requires proper management for smoothly functioning of the Restaurant. A Chef often referred to

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Define the food and beverage service areas
2. Find the members of food service area
3. Discuss on clean and clear food service areas

Kitchen Essentials and Basic Food Preparation

as 'Barker' is responsible for shouting the orders that are prepared and ready to be picked so as to inform the servers about it.

It is called a Food Pick up area or Pass counter as the servers pick up the food items ordered by the guests at their table from here.

The area is also used for keeping KOTs so as to tally pending orders and track orders that have been picked up by the servers.

This area also requires a F&B Staff who can reassure that there are no pending orders, the food is delivered on time by the kitchen and the servers pick up the right order for their tables.

The majority of food service establishments are in the commercial sector. These establishments vary in numerous respects, and it is not an easy task to categorize the vast array of establishments into neatly defined segments. There were once clearly defined segments, but today lines across segments are blurred in many respects. These limitations notwithstanding, we will discuss eight primary segments: 1) quick service 2) food trucks/street food 3) quick casual 4) family 5) casual 6) themed 7) casual upscale 8) upscale/fine dining. Each segment will be differentiated by service level, quality of menu offerings, and price point. These attributes will be discussed within each segment along with other unique characteristics.

FOOD AND BEVERAGE SERVICE AREAS

Food and Beverage Service areas includes several ancillary departments or sections with-in Food and Beverage Service department of a hotel or restaurant.



These are service areas usually acting as the link between the kitchen and the food service areas. They are always behind the scenes or “back-of-the-house” the service themselves are some of the busiest unit of a catering establishments, especially over a service period. Because of this it is important that department heads ensure that all staff knows exactly what their duties are and how to carry them out efficiently and quickly. In general, especially in large operations from main service areas can be distinguished

- A still room or a pantry
- Wash up/ Kitchen Stewarding
- Hot plate
- Linen Room
- Store

Still Room/Pantry

This is a service area whose main function is to provide items of food and beverages required for the service of meal and not catered for by other major departments in a hotel such as the kitchen, larder and bakery.



Following are some of the items dispense from the still room:

- All beverages such as coffee, tea, chocolate, Horlicks, etc.
- Assorted fruit juices/fresh and canned
- Milk and cream
- Sugars
- Preserves:-Jam, marmalade, honey etc. They are normally pre-portioned for better control.

- Butter – it can be curled or pre-wrapped portions
- Slice and buttered brown, white and malt breads
- Brioche, croissants
- Melba toast – these are cut into triangles and put on a **toast rack** the sides of the slice bread are cut off before service
- Assorted breakfast cereals- Cornflakes, Rice crispies, Muesli (mixed of all cereals) etc.
- Pastries, Gateaux and sandwiches
- Porridge and boiled eggs.

Keyword

Toast rack is a serving piece having vertical partitions (usually from five to eight in number) connected to a flat base, used for holding slices of toast. It often has a central ring handle for carrying and passing round the table.

Wash Up/ Kitchen Stewarding

The wash-up is the most important Food and Beverage Service Areas and must be sited correctly so that staff can work speedily and efficiently when passing from the food service area to the kitchen. Servers should stock trays of dishes correctly at the side boards with all the correct sized plates together and tableware (cutlery) stacked on one of the plates with the blade of the knives running under the arches of the forks. All glassware should be stacked on a separate tray and taken to a separate wash-up point.

The wash-up point should be closest to the exit from the food service area (the dining room). All the food debris should be put into the bin (wet garbage bin) and all dry garbage like paper doilies, paper serviettes etc. in a separate bin (dry garbage bin)

Hot Plate

The hot plate may be regarded as the meeting point b/w the food service staff (Food and Beverage) and the food preparation staff (kitchen). This is a place where all the crockery required for service will be kept warm. Care should be taken to make sure that the amounts of chinaware required are properly stacked in the hot case. In some hotels the silver required will be placed on top of the hotplate and used as required. Normally an 'ABOYEUR' (a backer) is in charge and controls the hotplate over the service periods. The hotplate is usually gas or electricity operated and should be lit well in advance of the service to ensure all the china and silver are sufficiently heated. Once a dish is ready

to serve the aboyeur will announce it loudly so that the respective waiter can pick it up. Once the food has been picked up the KOT (kitchen order ticket) is put into a control box which can be operated only by a member of the control department who for control purposes makes the copy of the food check from the kitchen.

Linen Room

It keeps a stock of the various linen used in the restaurant/ outlet. Example – table cloth, serviettes, guest napkin, slip cloth, baize etc.

Fresh linen is picked up by the restaurant staff in exchange of the soiled linen. Generally it is done once a day. But it might be more than once in case of coffee shop. A linen register is maintained on a daily basis for this purpose.

Store

Store room is the Food and Beverage Service Areas from where the Food and Beverage service staff requisite and receives items such as grocery and stationary that are required for smooth running of the day to day operation of the outlet.

Components of Restaurant Kitchen Layouts

A successful kitchen includes specific components organized in a particular pattern to optimize performance and efficiency.

Those components are:

Cleaning/Washing

The cleaning and washing section of a commercial kitchen includes sinks, ware washing machines, and drying racks. Three-compartment sinks are necessary for washing utensils, while ware washing machines can quickly clean plates and other serving vessels to keep the kitchen running at full speed. The kitchen should be located near the kitchen entrance so servers can quickly drop off dirty dishes and near the storage area so chefs can quickly find clean dishes.

Storage

The storage area can be split into non-food storage, cold storage, and dry storage. The non-food storage area can be split further into a section for disposable products, a section for cleaning supplies, and a section for the clean dishes from your cleaning/

Kitchen Essentials and Basic Food Preparation

washing area. Remember, in order to avoid contamination, cleaning and sanitation chemicals cannot be stored above food, food equipment, utensils, dishes, or disposables like cups and plastic cutlery. Cold storage is where you keep anything that needs to be refrigerated or frozen, while dry storage includes all nonperishables and other consumables. This area might also contain a receiving area for **inventory** shipments, shortening the distance new stock has to travel through your restaurant.

Food Preparation

The food preparation area has sinks for washing produce, cutting areas, and mixing areas. Typically, the food preparation area is split into a section for processing raw foods (breaking down cuts of beef, for example) and a section for sorting foods into batches (chopping vegetables, mixing salad dressings, etc.). Placing this section near your storage area allows cooks to efficiently grab fresh dishes, prepare plates, and move them on to the cooking area quickly.

Meal Cooking

The meal cooking area makes the rest of the kitchen tick. This is where main dishes are finished, so here you will have ranges, ovens, exhaust hoods, fryers, griddles, and other cooking equipment. Like the food preparation area, the meal cooking area can be broken down into smaller sections like a baking station, grilling station, and frying station. Because meals are finished here, the meal cooking area should be near the front of the kitchen next to the service area.

Service

The service area is the final section of a commercial kitchen. If you have a serving staff, this is where they will pick up finished dishes to take to customers. If you have a self-serve or buffet-style restaurant, this is where foods will be displayed in warmers for customers to assemble their plates. This area needs to be located at the very front of the kitchen, just after the meal cooking area, to shorten the time and distance between completed meals and customers.

Workflow Structures within the Food and Beverage Service Location

Individual service and high service standards are growing in importance to ensure satisfied guests and help you stand out from the crowd. We coach your staff in their daily tasks and duties and provide them with an effective tool so that they can

attend their guests with style, fulfill wishes in a service oriented manner and handle complaints professionally.



Food and beverage serving and related workers typically do the following:

- Greet customers and answer their questions about menu items and specials
- Take food or drink orders from customers
- Prepare food and drink orders, such as sandwiches, salads, and coffee
- Relay customers' orders to other kitchen staff
- Serve food and drinks to customers at a counter, at a stand, or in a hotel room
- Clean assigned work areas, dining tables, or serving counters
- Replenish and stock service stations, cabinets, and tables
- Set tables or prepare food trays for new customers

Food and beverage serving and related workers are the front line of customer service in restaurants, cafeterias, and other food service establishments. Depending on the establishment, they take customers' food and drink orders and serve food and beverages.

Most work as part of a team, helping coworkers to improve workflow and customer service.

The job titles of food and beverage serving and related workers vary with where they work and what they do.

Keyword

Inventory is the term for the goods available for sale and raw materials used to produce goods available for sale.



The following are examples of types of food and beverage serving and related workers:

- Combined food preparation and serving workers, including fast food, are employed primarily by fast-food restaurants. They take food and beverage orders, prepare or retrieve items when ready, fill cups with beverages, and accept customers' payments. They also heat food items and make salads and sandwiches.
- Counter attendants take orders and serve food over a counter in snack bars, cafeterias, movie theaters, and coffee shops. They fill cups with coffee, soda, and other beverages, and may prepare fountain specialties, such as milkshakes and ice cream sundaes. Counter attendants take carryout orders from diners and wrap or place items in containers. They clean counters, prepare itemized bills, and accept customers' payments.



- Food servers, non-restaurant, serve food to customers outside of a restaurant environment. Many deliver room service meals in hotels or meals to hospital rooms. Some act as carhops, bringing orders to customers in parked cars.
- Dining room and cafeteria attendants and bartender helpers— sometimes collectively referred to as bus staff—help waiters, waitresses, and bartenders by cleaning and setting tables, removing dirty dishes, and keeping serving areas stocked with supplies. They also may help waiters and waitresses by bringing meals out of the kitchen, distributing dishes to diners, filling water glasses, and delivering condiments. Cafeteria attendants stock serving tables with food trays, dishes, and silverware. They sometimes carry trays to dining tables for customers. Bartender helpers keep bar equipment clean and glasses washed.
- Hosts and hostesses greet customers and manage reservation and waiting lists. They may direct customers to coatrooms, restrooms, or a waiting area until their table is ready.

Work Environment

Food and beverage serving and related workers held about 4.4 million jobs in 2012. Nearly 3 in 4 worked in restaurants, including full-service and fast-food restaurants.

Food and beverage serving and related workers are on their feet most of the time and often carry heavy trays of food, dishes, and glassware. During busy dining periods, they are required to serve customers quickly and efficiently.



Injuries and Illnesses

Food preparation and serving areas in restaurants often have potential safety hazards, such as hot ovens and slippery floors. As a result, counter attendants, food servers, and dining room and cafeteria attendants and bartender helpers have a higher rate of injuries and illnesses than the national average. Common hazards include slips, cuts, and burns, but the injuries are seldom serious. To reduce these risks, workers often wear protective clothing, such as gloves, aprons, or nonslip shoes.

Work Schedules

About half of all food and beverage serving and related workers were employed part time in 2012. Because food service and drinking establishments typically have long dining hours, early morning, late evening, weekend, and holidays work is common. Those who work in school cafeterias may have more regular hours and work only during the school year, which is usually 9 to 10 months.

REMEMBER

Hosts and hostesses assign guests to tables suitable for the size of their group, escort patrons to their seats, and provide menus. They also take reservations over the phone, arrange parties, and help with other customers' requests.

In addition, long business hours allow for flexible schedules that appeal to many teenagers, who can gain work experience. Compared with all other occupations, a much larger proportion of food and beverage serving and related workers were 16 to 19 years old in 2012.

Food and Beverage Servicer

Most food and beverage service jobs are entry-level jobs and do not require a high school diploma. The majority of workers receive short-term on-the-job training.

Most states require workers, such as non-restaurant servers, who serve alcoholic beverages to be 18 years of age or older.



Education

Get the education you need: Find schools for Food and Beverage Serving and Related Workers near you!

There are no formal education requirements for becoming a food and beverage serving worker.

Training

Most workers learn their skills through short-term on-the-job training, usually lasting several weeks. Training includes basic customer service, kitchen safety, safe food-handling procedures, and good sanitation habits.

Some employers, particularly those in fast-food restaurants, teach new workers with the use of self-study programs, online programs, audiovisual presentations, or instructional booklets that explain food preparation and service procedures. However, most food and beverage serving and related workers learn their skills by watching and working with more experienced workers.

Some full-service restaurants provide new dining room employees with classroom training sessions that alternate with periods of on-the-job work experience. The training communicates the operating philosophy of the restaurant, helps new employees establish a personal rapport with other staff, teaches employees formal serving techniques, and instills a desire in the staff to work as a team.



Some non-restaurant servers and bartender helpers who work in establishments where alcohol is served may need training on state and local laws concerning the sale of **alcoholic beverages**. Some states, counties, and cities mandate such training, which typically lasts a few hours and can be taken online or in-house.

Keyword

Alcoholic beverage, any fermented liquor, such as wine, beer, or distilled spirit that contains ethyl alcohol, or ethanol, as an intoxicating agent.

Advancement

Advancement opportunities are limited to those who remain on the job for a long time. However, some dining room and cafeteria attendants and bartender helpers may advance to waiter, waitress, or bartender positions as they learn the basics of serving food or preparing drinks.

Important Qualities

- **Communication skills:** Food and beverage serving and related workers must listen carefully to their customers' orders and relay them correctly to the kitchen staff so that the orders are prepared to the customers' request.
- **Customer-service skills:** Food service establishments rely on good food and customer service to keep customers and succeed in a competitive industry. As a result, workers should be courteous and be able to attend to customers' requests.
- **Physical stamina:** Food and beverage serving and related

workers spend most of their work time standing, carrying heavy trays, cleaning work areas, and attending to customers' needs.

Communication in Kitchen and Services Area

A team is a collection of people who depend on each other's efforts to achieve a common goal. Teams are made up of individuals with a wide range of skills, strengths and weaknesses. A team should respect each other's differences and encourage all members of that team to reach their potential.

Where staff must have specific roles and tasks within a team structure, with which can be an effective method of organizing a workforce and encouraging people to co-operate, work together and communicate effectively.



Some characteristics of a good team:

- All members agree on the team goals, on how to achieve them and by when
- Team members are flexible and adaptable
- Have good communication with each other
- Problems are not allowed to fester unresolved
- Willing to share information with others
- Willing to support others with less skill or knowledge
- Willing to discuss the importance of consistency and standards to new staff



When new people join the workplace, there are some useful points which need to be followed:

- When familiarizing new staff members with dishes that are served, provide written details as to the contents of the dish and explanation of the method of cookery and standard garnish
- Take the new staff members and show them all of the areas they should be concerned with in regard to commodities they might need, e.g. crockery, food supplies, sauces utensils
- Familiarize each person with the times that need to be allocated in regard to plating and garnishing

Cooks prepare a large volume of food during meals in a commercial kitchen. The pace is hectic with various dangers, including cuts on sharp utensils, burns, and falls on slippery kitchen floors. Communication is a key component of keeping the kitchen running smoothly while reducing the risk of injuries on the job.

Address Language Barriers

If your kitchen staff consists of people who speak different native languages, the communication process is likely more complicated. Staff members who do not understand one another or who communicate differently may misunderstand what is going on. This potentially causes a backup in the kitchen, causing your guests to wait for their food. Provide training to all employees in multiple ways, such as verbally, through demonstrations, and through pictures, so all employees have a similar understanding of the kitchen communication process. Using pictures or hand signals in the kitchen is a way the staff can communicate easily during a busy shift despite language barriers.



Establish Communication Procedures

The person in charge of the kitchen needs to establish communication standards and procedures so all kitchen staff members know what to do. With expectations in place, the staff is better able to keep the kitchen running smoothly throughout the meal shifts. If no one understands how to announce the orders and communicate with one another on timing, you will run into trouble getting an entire table's meals out together. Train the staff when and how to communicate in the kitchen to meet those standards.

Encourage Communication

Despite the standards you set for kitchen communication, employees often need encouragement and coaching to improve the quality. Spend time in the kitchen to observe the strengths and weaknesses of the employees regarding communication. Demonstrate how to communicate when you notice a kitchen employee missing an opportunity to talk to his colleagues.

If a cook needs more time to finish the side dishes but does not alert the cook working on the main dishes, show him how to shout to the other employee to say he needs more time.



Implement Tools

Communication tools to connect the front and back of the house aid in the kitchen communication. An electronic order system

Kitchen Essentials and Basic Food Preparation

is a simple tool to help with communication. The system allows the servers to enter the orders, which are sent back to the kitchen. Once the order arrives in the kitchen, this sets in motion the communication in the kitchen. Establish one person to retrieve and announce the orders to the rest of the cooks. The automated system allows the cooks to easily keep track of the orders and their status. It also provides a form of visual communication, since all kitchen employees can look at the machine or print-outs to get order information.

MEMBERS OF FOOD SERVICE AREA

All types of catering establishments require a variety of staff positions in order to operate effectively and efficiently. The food and beverage service department usually has the largest staff. Able leadership and supervision is required to effectively direct the department and guide the staff. The personnel in the food and beverage service industry require practical knowledge of operations as even a small error can cause displeasure to the guest. Coordination of activities of all outlets is essential to provide the guest with quality service at all times. Teamwork is the watchword in any food and beverage service department. A dedicated and committed team, with able leadership, under ideal working conditions, helps in fulfilling the establishment's ultimate goal of guest satisfaction.



Food and Beverage Manager

The food and beverage manager is the head of the food and beverage service department, and is responsible for its administrative and operational work. Food and Beverage Managers direct, plan and control all aspects of food and beverage services.

Food and Beverage Managers require excellent sales and customer service skills, proven human resource management skills, and good communication and leadership skills. Desired knowledge for this position includes knowledge of the products, services, sector, industry and local area, and knowledge of relevant legislation and regulations, as well. Hence it is said that food and beverage manager is a Jack-of-all-trades, as the job covers a wide variety of duties.



In general, food and beverage manager is responsible for:

- **Budgeting:** The food and beverage manager is responsible for preparing the budget for the department. He should ensure that each outlet in the department achieves the estimated profit margins.
- **Compiling New Menus and Wine Lists:** In consultation with the chef, and based on the availability of ingredients and prevailing trends, the food and beverage manager should update and if necessary, compile new menus. New and updated wine lists should also be introduced regularly.
- **Quality Control:** The food and beverage manager should ensure quality control in terms of efficiency in all service areas, by ascertaining that the staffs are adequately trained in keeping with the standards of the unit.
- **Manpower Development:** The food and beverage manager is responsible for recruitment, promotions, transfers and dismissals in the department. He should hold regular meetings with section heads, to ensure that both routine as well as projected activities of the department go on as planned. He must also give training, motivate and effectively control staff.

Keyword

Food and Beverage Services is a process of preparing, presenting and serving of food and beverages to the customers through restaurants, food stalls etc.

Restaurant Manager

Restaurant Manager is responsible for directing and supervising all activities pertaining to employee relation, food production, sanitation, guest service and operating profits. The restaurant manager is either the coffee shop manager, bar manager or the specialist restaurant manager. The restaurant manager reports directly to the food and beverage manager and has overall responsibility for the organization and administration of a particular outlet or a section of the **food and beverage service** department.



The restaurant manager's job includes:

- Setting and monitoring the standards of service in the outlets.
- Administrative duties such as setting duty charts, granting leave, monitoring staff positions, recommending staff promotions and handling issues relating to discipline.
- Training the staff by conducting a daily briefing in the outlet.
- Playing a vital role in public relations, meeting guests in the outlets and attending to guest complaints, if any.
- Formulating the sales and expenditure budget for the outlet.
- Planning food festivals to increase the revenue and organizing advertisement campaign of the outlet along

with the chef and the food and beverage manager.

Room Service Manager

The room service manager reports directly to the food and beverage manager and is responsible for the room service outlet. The room service manager checks that the service rendered to the guests conforms to the standards set by the hotel. He also monitors all operational aspects of the outlet such as service, billing, duty charts, leave and absenteeism, in addition to attending to guest complaints regarding food and service.

The room service manager is also in charge of the sales and expenditure budget. The room service is most liable to have problems. The room service manager should ensure coordination among the room service order taker, the captain and the waiter. It is necessary for the room service manager to be present in the outlet during peak hours to interact with other departments of the hotel and to take regular momentums of all the equipment used. In the event of the hotel offering valet service and the room service manager takes charge of that service as well.



Room service managers are responsible for organizing and directing employees in their hotel's room service department. Their responsibilities vary greatly, as they may work in hotels, casinos, cruise ships, and many other areas of hospitality. They are often required to hire, evaluate, and train prospective new employees, and this training may require imparting sound knowledge of various cultural differences between customers. Room service managers are also responsible for monitoring expenses via budgeting and taking inventory, as well as rostering employees.



Aside from managing and supervising employees, they must still work with customers and guests to handle complaints and concerns, understand and accommodate special requests, and promote good public relations. They must also have comprehensive knowledge of food items served by their company to completely answer any queries or concerns from guests. This knowledge must include ingredient lists and preparation methods of foods to satisfy any customers with allergies or dietary requests; this may also include knowledge of wines, spirits, and other specialty items. Room service managers work entirely indoors. There are not many physical requirements, though they may need to carry food and beverages. Their hours may include weekends and late nights, as well as holidays, and their work requires them to constantly interact with others, including guests, co-workers, supervisors, and kitchen workers. Many companies prefer applicants who have a college degree in hospitality/hotel management, while others may prefer those with prior work experience.

Bar Manager

Bar Manager organizes and controls a bar's operations. A bar manager arranges the purchase and pricing of beverages according to budget; selects, trains and supervises bar staff; maintains records of stock levels and financial transactions; makes sure bar staff follow liquor laws and regulations; and checks on customer satisfaction and preferences.

The bar manager should have good interpersonal skills and good memory. He must be efficient and speedy, must enjoy working with people. He should have good cash-handling skills.

A strong bar manager is an individual who directs, controls and plans the activities of a bar. Strong employees are workers who are healthy and happy but

also collaborative, creative, innovative, accountable and decisive. The duties and responsibilities of a bar manager in scheduling strong employees revolve around planning, supervising and allocating the day-to-day operational activities of the bar.

Work scheduling also involves empowering employees through delegation of duties and training to better their experience. Empowerment is a significant element that contributes towards nurturing strong employees.



Scheduling Staff According to Changes in Customer Demand

Scheduling waiters according to the level of customer demand is an important responsibility of the bar manager because they interact directly with customers. As a bar manager, you need to forecast the daily flow of customers to be able to adjust the number of staff for each shift whenever there is a surge or decline in customer numbers. For example, you will require more waiters per shift over the weekends when customer numbers surge than during weekdays when fewer customers get entertained at the bar.

Scheduling Responsibilities for Inventory Control

A bar manager is responsible for ensuring that the inventory of the bar is well managed. As a bar manager, you can achieve this by allocating the inventory management duties to the storekeeper. You also need to allocate the responsibility of the tracking all the sales of all types of drinks including beers, cocktails, wines, spirits and beverages to the bar man.

This way, you will be able to monitor the movement of inventory from the store to the bar and the sales you make. When scheduling these tasks, you must ensure that the bar and store have adequate number of staff during all shifts.

Rescheduling Tasks to Cover for Absent Employees

Employees may be absent for reasons such as off-days, sickness, maternity leave, disciplinary suspension or because of other factors beyond their control. You do not need to recruit temporary replacement staff during brief periods of employee absenteeism unless more than two staff members are absent because strong employees observe collaboration and creativity. The best way to deal with such cases temporary absenteeism is to reschedule duties so that the present employees can stand in for the absent employees. You can use this opportunity to allow subordinate employees to stand in for their seniors and in so doing you would effectively be training and empowering the **subordinate** employees.

Keyword

Subordinate is an employee ranked below another employee in terms of seniority or office hierarchy.

Allocating Cleaning Tasks

The bar manager is charged with the responsibility of ensuring that the bar is perfectly cleaned on a daily basis. This is because cleanliness is the epitome of bar business. As the bar manager, you are responsible for scheduling employees who will clean the floors, furniture, wash glasses and other utensils on a continuous basis. Multi-tasking is one of the best approaches to achieve this fete, such that, you can develop a duty roaster in which the waiters take turns in cleaning while maintaining their routine responsibilities.

Banquet Manager

The banquet manager supervises the banquet operations, sets up break-down service according to the standards established by the hotel. His co-ordinates the banquet service in conjunction with other departments involved and prepares weekly schedules for the banquet personnel.

From the time the bookings are done till the guest settles the bill, the banquet manager is in charge of all aspects of banquet and conference operations. He supervises the work of the banquet sales assistants, who do the banquet bookings and the captains and waiters who perform the food and beverage service activities under his guidance. He is responsible for organizing everything right down to the finest detail.



The banquet manager projects the budget of the banquets, and works in close coordination with the chef in preparing menus. He is responsible for making an inventory of all the banquet equipment and maintaining a balance between revenue and expenditure. Banquet managers may also be designated as assistant managers in the food and beverage service department.

A banquet manager's job begins after the event sale is made, the contract is signed and continues after the last guest has left. Banquet managers work with banquet sales directors and chefs to ensure that all of the terms of a contract are met and that guests receive the highest quality in food service and overall experience.

Post-Sale Meeting

After a banquet facility signs a contract with a client, the banquet manager meets with the sales director and executive chef to review the contract. The banquet manager reviews the number of guests, type of function and room layout. This helps him understand how many wait staff the function will require, how the room should be set up, how the type of meal served will affect the timing of food service and what items the room will need regarding tables, chairs, carving station and bar.

Planning

Once the banquet manager is familiar with the event logistics, he will review the execution of event. This includes when cocktails will be served, guests are seated, dinner is served and cleared and the hours the bar will be open. He will ensure the facility has everything needed to fulfill the contract, taking an inventory of tables, chairs, tablecloths, glasses, centerpieces, candles, utensils, linens, heat lamps and all non-kitchen items the function will require. The executive chef is responsible for

Kitchen Essentials and Basic Food Preparation

some of the items the banquet staff will use, such as food racks and heating boxes. If the facility does not have a bar manager, the banquet manager handles all beer, wine, liquor and soft drink logistics.



Staffing

The banquet manager determines the staffing levels of events, including servers, busboys and bartenders. The manager will assign individual in-house staff and book any contract labor required. The banquet manager and sales director often work on staff budgets to ensure the facility meets its profit goals. A banquet manager helps hire, train, manage, discipline and terminate staff. He also determines the distribution of gratuities, usually built into the bill.

Kitchen Liaison

After the sales director meets with the chef, the banquet manager and chef work together to fulfill the contract. The chef usually tells the banquet manager how he plans to serve the meal, with the manager making suggestions concerning meal delivery. Banquets usually require servers to help with simple meal prep as part of a pre-service assembly-line process called “plating.” During plating, a row of people send plates from one to another, each adding one item to the plate, with the final person often adding a sauce or gravy and a sprinkle of parsley before covering the plate and placing it in the heating box. The chef might start the line, placing the main entree item on the plate, with the banquet manager performing the last function to ensure each plate looks professional before it’s served.

Post-Event Duties

After a banquet, the banquet manager will make notes about any items the facility needs to repair or replaced to ensure proper inventory. He will have a meeting or conversation with the sales director and/or chef to discuss any problems or suggestions for future events.

Other Staff Designations at Various Levels

The following are the various designations with their job specifications in the food and beverage department.

Senior Captain

The senior captain has overall responsibility for operations. He prepares the duty charts in consultation with the outlet manager. He oversees the Mise-en-place, cleaning, setting up of the outlet and staffing to ensure that the outlet is always ready for service. The senior captain receives the guests and hands them over to the captain or station holder. He takes orders from guests if the captain is unable to do so. The senior captain should be an able organizer and also be prepared to take over the duties of any member of the staff as and when required.

REMEMBER

The banquet manager might act as the contact between the banquet client and the facility, answering any questions, such as whether the bar can be kept open, if the wine selection can be changed or if additional quests can be added.

Reception Head Waiter

This staff member is responsible for accepting any booking and for keeping the booking diary up-to-date. He / she will reserve tables and allocate these reservations to particular stations. The reception head waiter greets guests on arrival and takes them to the table and seats them.

Captain / Chef

This position exists in large restaurants, as well as in the food and beverage service department of all major hotels. The captain is basically a supervisor and is in charge of a particular section. A restaurant may be divided into sections called Stations, each consisting of 4 to 5 tables or 20 to 24 covers. A captain is responsible for the efficient performance of the staff in his

Kitchen Essentials and Basic Food Preparation

station. A captain should possess a sound knowledge of food and beverage, and be able to discuss the menu with the guests. He should be able to take a guest's order and be an efficient salesperson. Specialized service such as gueridon work involves a certain degree of skill, and it is the captain who usually takes the responsibility to do this work.

Waiters / Server

The waiters serve the food and beverage ordered by a guest and is part of a team under a station captain. They should be able to perform the duties of a captain to a certain extent and be a substitute for the captain if he is busy or not on duty.

They should; also be knowledgeable about all types of food and beverages, so that they can effectively take an order from a guest, execute the order and serve the correct dish with its appropriate garnish and accompaniment. They should be able to efficiently coordinate with the other staff in the outlet.

Trainee

The trainees work closely with the waiters, fetching orders from the kitchen and the bar, and clearing the side station in a restaurant. They serve water and assist the waiter. They are mainly responsible for the mise-en-place, and stacking the side board with the necessary equipment for service.

Serving Dishes and Utensils

During service the right and left hands have distinct functions to perform. The left hand carries while the right hand works. Flatware, glasses, cups, and the like are always carried on a tray, never in hands.



For safety and to prevent clattering, this tray should always be covered with a paper or cloth napkin. While bringing platters to the side table or guest table, always carry

them in both hands. The hand towel should be draped lengthwise over the cloth so you can hold the platter on both ends. If several plates or serving dishes are carried at the same time, place them on the towel so they will not slide. Serving bowls and sauce boats are always placed on a small plate with a paper doily.

Points should be Keep in Mind While Serving Dishes

- The guest should never be kept waiting for his check. 2.
- It should be presented either immediately after the last course has been served or as soon as he has finished eating. 3.
- A check cover should be used to transport the bill to and from the table. 4.
- The cover should be placed to the right of the host. If the host is not known, the check should be placed at the center of the table. 5.
- It is always a courteous practice to ask if any other services are desired. 6.
- Guests should be shown small courtesies when departing; for example, a server may draw out the chair for a female guest and assist her with her coat etc... The server should express his goodbye sincerely and welcome the guest to return. The idea is to make the guest feel completely welcome.
- When guests ask for check, Captains should inquire as to the satisfaction of the guests. Check is then delivered to table.

Special Observations While Serving Meals

There are many things a server must attend to become fully efficient. Here are a few tips a server can use to take advantage:

- Serve hot food hot, on heated dishes.
- Serve cold food chilled, on cold dishes.
- Inquire how food is to be cooked:
- Eggs - fried or boiled, scrambled etc.
- Steak - rare, medium, or well done etc.
- Toast - buttered or dry
- Refill water glasses whenever necessary during the meal.
- Refill coffee. Customer will let you know if they have had enough.
- Place silver necessary for a course just prior to serving

CLEAN AND CLEAR FOOD SERVICE AREAS

The highest cleaning priority is food contact surfaces and preparation areas. Next we concentrate on high priority non-food contact areas such as dining areas, lobbies, entrances, rest rooms and. In addition we must not overlook such areas as hoods ducts, and food storage areas.

There are a wide variety of surfaces in a food service area. The most common are stainless steel, wood, plastic, iron, paint and glass, in addition, to floor coverings such as VCT, ceramic or quarry tile, vinyl sheet goods, concrete, rubber mats and carpet.

The lowest level of cleaning is for appearance and to reduce the possibility of contamination. This level of cleaning is appropriate for non-food contact areas and surfaces such as parking lots, entrances, lobbies, floors, carpets, ceilings, walls, vents and signage. A higher and more common level of cleanliness in food service areas is sanitization. Here the purpose is to reduce or maintain germ counts at acceptable level. This is common for food preparation surfaces, tables, counters, dishware, cooking utensils and equipment.



The highest level of cleanliness is **sterilization**. This means to kill all living organisms. This may be needed in certain health care facilities and in some high tech food processing plants, but is seldom needed or even possible in restaurants and kitchens today.

It is important to stress the need to use cleaning methods that limit the redistribution or spreading of soil by airborne, transfer or other methods. Modern day cleaning procedures, to be effective, must be based on a four step closed cycle process:

- Identify the soil to be removed.
- Remove it from the surface (without spreading it).
- Package and hold it.
- Dispose/remove soil from the facility.

Kitchens get dirty with grease and trash collecting quickly. It is important that all surfaces and equipment be cleaned and the trash removed on a regular schedule to prevent unsafe or unsanitary conditions from developing.

For ease of cleaning it is best to view the kitchen as sections that have specific duties and frequencies. As an example a common grouping would be hot areas and cold areas. Cold areas include salad preparation, pantry, walk-ins, freezers, storage and other areas that are in or near the kitchen, but where no actual cooking takes place. Hot areas include stoves, grills, fryers, ovens and nearby work surfaces such as counters and tables.

Keyword

Sterilization refers to any process that eliminates, removes, kills, or deactivates all forms of life and other biological agents like prions present in a specific surface, object or fluid, for example food or biological culture media.



Another grouping is by cleaning the task being done. As an example, all sweeping, mopping, trash dumping, counter wiping, or equipment cleaning would be done on separate passes through each section or throughout the entire kitchen if possible. Grouping like tasks (all trash dumping) together is more efficient than stopping and starting several different tasks in rapid succession in one area.

One last consideration is frequency, or how often will the different tasks be done. The basic duties such as sweeping, mopping, trash removal, sanitizing and equipment cleaning, etc. must be done daily. Other tasks may be done on a less frequent or periodic schedule such as once a week, once a month, once a quarter, or once or twice yearly.

Service Equipment/Utensils and Supplies

The importance of proper cleaning can be appreciated when one realizes that contaminated equipment (equipment and utensils which are not clean) is another major cause of foodborne disease outbreaks. Cleaning comprises many operations in the food establishment, and the process is usually specific to the type of cleaning necessary. No cleaning task in the food establishment is as important as the cleaning and sanitization of food contact surfaces of equipment and utensils.

Elegant and attractive service ware, colorful and clean dishes, quality plates and glassware add to the decor of a restaurant. However, several factors have to be considered while selecting the equipment.

- Standard of the restaurant
- Types of service
- Décor and theme of the restaurant
- Type of clientele
- Durability of equipment
- Ease of maintenance
- Availability when stocks run out for replacement
- Storage
- Flexibility of use
- Price factors
- Standardization

A hotel / restaurant should be well stocked with appropriate equipment to provide quality service. For multipurpose use and to cut down costs, most hotels / restaurants standardize equipment in terms of size and color.

Food and beverage service equipment may be divided into glassware, chinaware and tableware which are further subdivided into flatware, cutlery and hollowware.

Glassware

Glassware refers to glass and drink ware items besides tableware, such as dishes, cutlery and flatware, used to set a table for eating a meal. The term usually refers

to the drinking vessels, unless the dinnerware is also made of glass. The choice of the right quality glass is a vital element if the cocktail is to be invitingly presented and give satisfaction to the consumer. Well-designed glassware combines elegance, strength and stability, and should be fine and smooth rimmed and of clear glass.



Types of Glassware

Many standard patterns and sizes of glassware are available to serve each drink. Most glass drinking vessels are either tumblers, flat-bottomed glasses with no handle, foot, or stem; footed glasses, which have a bowl above a flat base, but no stem; or stemware, which have a bowl on a stem above a flat base. Neither a tumbler, footed, nor a stem, yard (beer) is a very tall, conical beer glass, with a ground ball base, usually hung on the wall when empty.

- **Collins Glassware:** A Collins glass is a glass tumbler, holding 240 to 350 ml, used to serve a mixed drink, named after Tom Collins. This glass is somewhat narrower, and holds less than the similar highball glass.
- **Highball Glass:** A highball glass is a glass tumbler, holding between 8 and 12 fluid ounces (240 to 350 mL), used to serve a mixed drink, or highball. This glass is taller than an Old-Fashioned glass, and shorter than a Collins glass.
- **Shot Glass:** It is a small glass used for measuring or serving up to three ounces of liquor. Modern shot glass holds a thicker base and sides than the whiskey glass.



- **Pint Glass:** A pint glass is a drinking vessel holding an imperial pint (568 ml) of liquid and is usually used for beer. Three common shapes of pint glass are found (conical, jug, and flared top), though others are available. Pints are considered good for serving stouts, porters and English ales.
- **Pilsner Glass:** A pilsner glass is a glass used to serve many types of light beers, but is intended for its namesake, the pilsner. Pilsner glasses are generally smaller than a pint glass, usually in 250 ml or 330 ml sizes. They are tall, slender and tapered. Wheat beer glasses are often mistakenly referred to as pilsner glasses, but a true pilsner glass has an even taper without curvature. Pilsner glasses are made to showcase the color, **effervescence**, and clarity of the pilsner, as well as to maintain a nice head.
- **Beer Stein:** A beer stein is a traditionally-German beer tankard or mug, made of pewter, silver, wood, porcelain, earthenware or glass; usually with a hinged lid and levered thumb lift.
- **Flute Glass:** A flute glass is the preferred serving vessel for Belgian limbic and fruit beers. The narrow shape helps maintain carbonation, while providing a strong aromatic front. Flute glasses display the lively carbonation, sparkling color, and soft lacing of this distinct style.
- **Goblet or Chalice:** Chalices and goblets are large, stemmed, bowl shaped glasses adequate for serving heavy Belgian ales, German bocks, and other big sipping beers. The distinction between goblet and chalice is typically in the glass thickness. Goblets tend to be more delicate and thin, while the chalice is heavy and thick walled.
- **Wheat Beer Glass:** A wheat beer glass is a glass used to serve wheat beer, known also as Weizenbier or Webber. The German glass generally holds 500 milliliters with room for foam or “head”. It is much taller than a pint

glass. It is very narrow at the bottom and slightly wider at the top. In other countries such as Belgium, the glass may hold 250 ml or 330 ml. The tall glass provides room for the often thick, fluffy heads produced by the style, which traps aromas and is visually pleasing.

- **Tulip Glass:** A tulip glass not only helps trap the aroma, but also aids in maintaining large heads, creating a visual and olfactory sensation. The body is bulbous, but the top flares out to form a lip which helps head retention. It is recommended for serving Scottish ales, barley wines, Belgian ales and other aromatic beers.
- **Cocktail Glass:** A cocktail glass, martini glass, or champagne glass, or stem cocktail glass, is a drinking glass with a cone-shaped bowl on a stem above a flat base, used to serve a cocktail or champagne. As with other stemware, the stem allows the drinker to hold the glass without affecting the temperature of the drink. One variation is the double martini glass which is taller and wider at the opening than a standard martini glass
- **Red Wine Glasses:** Glasses for red wine are characterized by their rounder, wider bowl, which gives the wine a chance to breathe. Since most reds are meant to be consumed at room temperature, the wider bowl also allows the wine to cool more quickly after hand contact has warmed it. Red wine glasses can have particular styles of their own, such as:
 - **Bordeaux glass:** Tall with a wide bowl, and is designed for full bodied red wines like Cabernet and Merlot as it directs wine to the back of the mouth.
 - **Burgundy glass:** Larger than the Bordeaux glass, it has a larger bowl to accumulate aromas of more delicate red wines such as Pinot Noir. This style of glass directs wine to the tip of the tongue.
- **White Wine Glass:** White wine glasses are generally narrower, although not as narrow as champagne flutes, with somewhat straight or tulip-shaped sides. The narrowness of the white wine glass allows the chilled wine to retain its temperature for two reasons;
 - The reduced surface area of the glass (in comparison to red wine glasses) means less air circulating around the glass and warming the wine.
 - The smaller bowl of the glass means less contact between the hand and the glass, and so body heat does not transfer as easily or as fast to the wine.
- **Champagne Flutes:** Champagne flutes are characterized by a long stem with a tall, narrow bowl on top. The shape is designed to keep sparkling wine attractive and inviting during its consumption. The glass is designed to be held by the stem to help prevent the heat from the hand warming up the champagne. The bowl itself is designed in a manner to help retain the signature carbonation in the beverage. This is achieved by reducing the

Keyword

Effervescence is the escape of gas from an aqueous solution and the foaming or fizzing that results from that release.

surface area at the opening of the bowl. Champagne flutes are often used at formal engagements, such as award ceremonies and weddings.

- **Sherry Glass:** A sherry glass is a drink ware generally used for serving aromatic alcoholic beverages, such as sherry, port, aperitifs and liqueurs, and layered shooters. An ISO-standard sized sherry glass is 120 ml. The copita, with its aroma-enhancing narrow taper, is a type of sherry glass.
- **Coupette Glass:** A modified version of the cocktail glass. Used for serving drinks where the rim of the glass is required to be coated in either sugar or salt or any other condiments used to make some of the more exotic drinks such as margaritas.
- **Pitcher:** This larger container usually has a handle and a lip or spout for pouring the contents into several glasses. Available in glass or plastic. Generally used for serving beer for a beer keg for draft beer.
- **Old Fashioned Glass:** The Old-Fashioned glass, rocks glass, or “lowball”, is a short tumbler used for serving liquor “on the rocks”, meaning over ice, or cocktails having few ingredients. It is named after the old fashioned cocktail, traditionally served in such a glass. A White Russian is traditionally served in the old fashioned glass.

Handling of Glassware

- Glassware is highly fragile and most delicate and expensive: hence at most care has to be taken while handling glass equipment's.
- Glasses are normally stored in a glass pantry and should be placed upside down in single rows on paper-lined shelves, to prevent dust settling in them.
- Tumblers should not be stacked inside one another as this may result in heavy breakages and accidents.
- The appearance of the drink mainly depends on the glass and therefore, the glass should be sparkling clean and attractive in shape and style.
- When glassware is machine or hand washed, each

individual item must be polished and dried with a glass cloth made of linen, as water leaves stains on the glasses.

- Glasses whether clean or dirty have to be handled by the base or stem, since the finger prints left on the glass necessitates polishing.

Chinaware

China is a term used for crockery whether bone china (expensive and fine), earthenware (opaque and cheaper) or vitrified (metallized). Most catering crockery used nowadays tends to be vitrified earthenware, which is very durable and haven been strengthened. Crockery is also usually given rolled edges to make it more chip resistant.

Chinaware is made of silica, soda ash, and china clay, glazed to give a fine finish. Chinaware can be found in different colors and designs which are always coated with glaze. Chinaware is more resistant to heat than glassware. There are various classification of catering china.



They are:

- **Porcelain:** Porcelain is a ceramic material made by heating selected and refined materials, which often includes clay of kaolinite clay, to high temperatures. The raw materials for porcelain, when mixed with water, form a plastic body that can be worked to a required shape before firing in a kiln at temperatures between 1200°C and 1400°C. The toughness, strength, and translucence of porcelain arise mainly from the formation of glass at high temperatures and the mineral mullite within the fired body.

DID YOU KNOW



The first coasters were designed for decanters or wine bottles, so that they could be slid (or “coasted”) around the dinner table after the servants had retired. They were in common use after about 1760.

- **Bone China:** Bone china is porcelain made of clay mixed with bone ash. This is very fine, hard china that is very expensive. The decorations are to be found under the glaze only. The price of bone china puts it out of reach of the majority of everyday caterers, and only a few of the top class hotels and restaurants would use it. The range of design, pattern and color is very wide and there is something to suit all occasions and situations.
- **Earthenware:** Earthenware may sometimes be as thin as bone china and other porcelains, though it is not translucent and is more easily chipped. Earthenware is also less strong, less tough, and more porous than stoneware, but its low cost and easier working compensate for these deficiencies. Due to its higher porosity, earthenware must usually be glazed in order to be watertight.
- **Stoneware:** Stoneware is a hard pottery made from siliceous paste, fired at high temperature to vitrify (make glassy) the body. Stoneware is heavier and more opaque than porcelain. The usual color of fired stoneware tends to be grayish, though there may be a wide range of colors, depending on the clay. It has been produced in China since ancient times and is the forerunner of Chinese porcelain.

Chinaware Serving Items

There are wide ranges of chinaware serving items and their sizes vary according to the manufacturer and the design produced. Recent developments in chinaware include the ovenproof ware (dishes, casserole and cocotte dishes), which allow food to be brought straight from the oven to the table.

Handling of Chinaware

Whatever quality of china or crockery is used, the most important thing to ensure is that it is washed, rinsed and dried correctly to ensure that no dirt, stains or streaks appear.

- Chinaware has a high breakage rate and, therefore, needs careful handling.
- They should be stored on shelves in piles or stakes of

approximately two dozen each. Any higher may result in their toppling down.

- They should be stored at a convenient height for placing on, and removing from the shelves to avoid accidents.
- Chinaware should be kept covered to prevent dust and germs settling on it.
- Chipped and cracked items harbor germs and should, therefore, not be used and disposed of carefully.

Tableware

Tableware includes the dishes, glassware, cutlery, and flatware eating utensils (knives, forks, and spoons) used to set a table for eating a meal. The nature, variety, and number of objects vary from culture to culture, and may vary from meal to meal as well. Tableware may be categorized as follows:

- **Flatware:** Flatware denotes all forms of spoon and fork. Flatware, especially that used by most people when they eat informally, is usually made of stainless steel.
- **Cutlery:** Cutlery refers to knives and other cutting instruments.
- **Holloware:** Holloware refers to table service items such as sugar bowls, creamers, coffee pots, teapots, soup tureens,



Special Tableware

There is almost an unlimited range of flatware, cutlery and hollowware in use in the catering industry. Apart from the familiar knife, fork, spoon, vegetable dishes and lids, entrée dishes and lids, soup tureens, teapot, hot water jugs, sugar basins there are a number of specialist items of equipment available for use with specific dishes. Some common specialist equipment's are listed follows:

- **Asparagus Holder:** The asparagus holder is a utensil for a diner to hold a single stalk of asparagus. It is made of a single strip of metal, bent in the form of U-shaped tongs, with a small square plate at each end to grip the stalk.
- **Pastry Fork:** Pastry fork is a small fork designed for eating pastries and other desserts while holding a plate. It is typically designed so that it can be used with the right hand, while the left hand holds the plate. It therefore has the left side widened to be used like a knife to cut the food when pressed down on the plate. Left-handed pastry forks have the right side widened instead. This fork may also be used to lift fruit pieces from the plate.
- **Oyster Fork:** A fork used for picking up shellfish cocktail or oysters. This fork is shaped like a regular fork, but it slightly smaller and the tines are curved outward.
- **Lobster Pick:** This long, narrow utensil is used to pull every shred of meat from the hard-to-reach cavities (such as the legs) of lobsters and crabs. The tip of a lobster pick can either be pointed or in the shape of a tiny, two-prong fork.
- **Snail Tong and Snail Fork:** Small, spring-operated tongs used to hold hot snail shells while extracting the snail. Unlike most tongs, these open by squeezing the handles. When the pressure is released, the tongs snap securely around the snail shell.
- **Snail Dish** It is a round dish with two ears having six indentations to hold portion of six snails.
- **Skewers:** A long, thin, pointed rod that comes in various sizes. Skewers are made of metal or wood; the former often has a ring at one end. They are most often used to hold meat in place during cooking/ serving, as well as to skewer meat and vegetables to be grilled for **shish kebab**. The best skewers are square or flat-shaped that hold food securely when moved. Usually made of stainless steel.
- **Ice-cream Scoop:** It is used to remove ice cream from a carton or other container while forming the ice cream into a ball or oval shape. Ice-cream scoops come in several styles and sizes. The simplest is a plain metal scoop- o r spade-shaped utensil. Next comes one shaped like a half-globe or oval with a spring-action lever in the handle. When squeezed, the lever moves

an arc-shaped blade across the scoop's interior and ejects the ice-cream ball. The nonstick-style scoop has antifreeze sealed inside.

- **Nutcracker:** It is a tool for cracking hard nutshells, usually consisting of two hinged metal arms between which the nut is squeezed.

Tables and Chairs

The size and shape of tables depends entirely on the availability of space and the kind of service envisaged. Normally three types of tables are used. They are rounding, rectangular and square.

The height of the table irrespective of the shape should be 75 cm from the floor level. The diameter of a round table to seat four people should be approximately 92 cm. The size of a square table to seat two people should 76 cm sq and 92 cm square to seat four People. The size of rectangular table to seat four people should be 137 cm x 76 cm. Commercial table tops come in a variety of materials: wood, metal, stone, tile and melamine. Many restaurant table tops are available with edged finishes to prevent scuffs and dents.

However the dimension of chairs should be relative to table dimensions. The average height of the chair should be 92 cm. The seat should be 46 cm from the floor and 23 cm from the top of the table. This would enable guests to sit and eat comfortably, without their legs touching the underside of the table.

Keyword

Shish kebab is a popular meal of skewered and grilled cubes of meat. It is similar to or synonymous with a dish called shashlik, which is found in the Caucasus region.

Trolleys

The various trolleys used in the food and beverage service outlets are:

Gueridon or Flambe Trolley

A gueridon or flambe trolley is a small mobile trolley that can be placed alongside the guest's table. It consists of one or two burners, a gas cylinder and a work and storage space for plates and cooking equipment. Using this trolley, the food is flambéed at the guest's table. Only skilled and well trained waiters are allowed to handle this service as there is the risk of spoiling

food by overcooking it, and of the flame causing a fire in the premises.



REMEMBER

The waiter should stack the trays of dirties correctly at the side board with all the same sized plates together and all the tableware stacked on one of the plates with the blades of the knives running under the arch of the forks.

Room Service Trolley

This trolley is known for its versatility. It is used for the service to guests in their rooms. The waiter sets up the meal and covers on the trolley and wheels it into the guest's room. This trolley may also be used as a dining table in the privacy of the guest's room. Beneath the trolley top, provision is made for mounting a hot case to keep the food warm.

Dessert Trolley

This trolley serves as a visual aid to selling desserts. Guests are more likely to order a dessert if they can see what is available, particularly if it is well presented. Some dessert trolleys are refrigerated. Gateaux, pastries, jellies, tarts, pies, flans and soufflés can be served from a dessert trolley.

This trolley has several shelves and the bottom shelf is reserved for plates, cutlery, linen and other service equipment. A glass or transparent trolley top makes it easy for guests to select a dessert of their choice.

A buffet-style breakfast is served in the spacious air-conditioned restaurant, which offers a choice of menu at lunch and dinner with a vegetable/salad bar and dessert trolley featuring desserts made on the premises.

SUMMARY

- Food and beverage outlets are the areas in a hotel where food and beverages are sold to both in-house and outside guests.
- A successful kitchen includes specific components organized in a particular pattern to optimize performance and efficiency.
- Counter attendants take orders and serve food over a counter in snack bars, cafeterias, movie theaters, and coffee shops.
- Food and beverage serving and related workers are on their feet most of the time and often carry heavy trays of food, dishes, and glassware.
- Food and beverage serving and related workers spend most of their work time standing, carrying heavy trays, cleaning work areas, and attending to customers' needs.
- The personnel in the food and beverage service industry require practical knowledge of operations as even a small error can cause displeasure to the guest.
- Room service managers are also responsible for monitoring expenses via budgeting and taking inventory, as well as rostering employees.

MULTIPLE CHOICE QUESTIONS

1. **Fast-food restaurants are able to keep prices low because:**
 - a. They have fewer seats than other restaurants.
 - b. They do not need to train staff, and the work is easy.
 - c. They use poor quality food products.
 - d. They use a limited menu and provide no table service.
2. **A restaurant that makes less than 20% of its profits from tourism revenues may be called:**
 - a. A tourism-profit-dependent restaurant.
 - b. A tourism-sales-dependent restaurant.
 - c. A franchise restaurant.
 - d. A resident-sales-dependent restaurant.
3. **Restaurants that serve home-style food, provide booster seats and highchairs, and fast, friendly table service are most likely:**
 - a. Fast-food restaurants.
 - b. Specialty restaurants.
 - c. Family-style restaurants.
 - d. Franchised restaurants.
4. **In order to determine if a restaurant is tourism-sales-dependent, you must consider:**
 - a. The type of food on the menu.
 - b. The type of ownership.
 - c. The level of service.
 - d. The location of the restaurant.
5. **If a restaurant makes you feel as though you have been transported in time and place and offers you entertainment with your meal, it might be called a (an):**
 - a. Theme restaurant.
 - b. Specialty restaurant.
 - c. Haute cuisine restaurant.
 - d. Ethnic restaurant.
6. **The person who serves alcoholic beverages in a restaurant is called a:**
 - a. commise de rang

Kitchen Essentials and Basic Food Preparation

- b. trancheur
 - c. sommelier
 - d. debarrasseur
7. The best way to deal with a customer who complains about poor service is to:
- a. apologise
 - b. offer him a free drink
 - c. inform the head waiter
 - d. try to make excuses

REVIEW QUESTIONS

1. Define the useful components for restaurant kitchen work layouts
2. What are the workflow structures within the food and beverage service location?
3. Which types of work environment needed in the food and beverage service area?
4. What are the role and responsibility of food and beverage manager?
5. Explain the useful service equipment/utensils and supplies in service area.

Answer to Multiple Choice Questions

1. (d) 2. (d) 3. (c) 4. (d) 5. (a)
6. (c) 7. (c)

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CHAPTER 4

COOKING TECHNIQUES

INTRODUCTION

A world class chef not only masters his preferred style of cooking, but also wields the skills needed to cook up a storm using a variety of techniques. The three types of cooking methods are dry heat cooking, moist heat cooking, and combination cooking. Each of these methods uses heat to affect foods in a different way. All cooking techniques, from grilling to steaming, can be grouped under one of these three methods. Understanding and mastering the different types of cooking methods is essential to becoming a great chef or home cook. Knowledge of cooking techniques allows you to work with a variety of ingredients and kitchen equipment to achieve consistent, flavorful results in your cooking. Continue reading to learn about the three main types of cooking, all the techniques that fall under those types, and the foods that are complemented by these techniques.

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Write the recipes and ingredients for cooking techniques
2. Find the losses of nutrients during cooking

COOKING TECHNIQUES: RECIPES AND INGREDIENTS

Cooking is being practiced since times immemorial. Do you know that the ancient man ate only raw food? Once a piece of meat fell into the fire accidentally and got roasted. The ancient man ate this piece of roasted meat and liked it. Thus began the process of cooking. It has evolved a lot since then. Generally, vegetables like tomatoes, cucumber and fruits are best eaten raw while wheat, rice, pulses, potatoes and other vegetables must be cooked.

The most common methods are likely to be boiling, frying and pressure cooking. We will now describe the procedure of each method of cooking along with precautions, its suitability to various foods, and its advantages and disadvantages. Check if you are following the same procedure.

Cooking Techniques Everyone Should Know

If you want to become a culinary force to be reckoned with, you need to master certain basic skills. First, we'll go over a few basic cooking methods, like sautéing, roasting, and braising, followed by a rundown of some of the most fundamental procedures and basic preparations in the culinary arts. Here are 25 of the most important cooking techniques everyone should know.

- Sautéing is a form of dry-heat cooking that uses a very hot pan and a small amount of fat to cook foods like vegetables, meats, and seafood very quickly. Like other dry-heat cooking methods, sautéing browns the food's surface as it cooks and develops complex flavors and aromas.
- In general, roasting refers to cooking something in the oven at a very high temperature, say 400 F or hotter, whereas baking might employ a lower temperature, like 325 to 375 F. But these are not absolute definitions. Regardless of what you call them, roasting and baking are skills you need to know.
- Braising is a moist-heat technique for cooking meats and vegetables. The long, slow temperatures help tenderize tough cuts of meat as well as root vegetables, greens, and beans and legumes and are the starting point for making soups and stews.
- The fact is, you'll almost never actually boil something in the **culinary arts**. Usually, your goal is to simmer it instead. Simmering is a gentle technique that's useful for cooking everything from vegetables, soup, and stews to even large cuts of meat.
- No matter what you do in the kitchen, whether it's slicing, dicing, mincing, or chopping, it all starts with a chef's knife in your hand. Learning how to use a chef's knife can not only make you safe in the kitchen but makes

recipes better overall.

- Once you've got your basic knife skills down, here's your first test: chopping an onion. Any number of savory dishes and sauces feature chopped onions, so you might as well learn to chop them a safe and easy way.
- Deglazing a pan involves adding liquid, such as stock or wine, to a pan to loosen and dissolve food particles that are stuck to the bottom after cooking or searing. The flavorful mixture produced by deglazing can be used to make a simple pan sauce.
- Boiling an egg is another cooking technique that's super basic. Not only will this guide help you make perfect hard-boiled eggs that don't smell like sulphur or taste like rubber, but it also reveals the secret to peeling them with ease.
- Once you've mastered the right way to poach an egg, you'll not only start serving everything from oatmeal to sandwiches with a poached egg on top, you'll also wonder how you ever survived them any other way.
- If it's starting to look like cooking eggs is one of the most important kitchen skills a person can learn, that's because it is. This time we tackle how to make an omelet. If you can make this 5-minute omelet, you'll be set for breakfast, brunch, and dinner as well.
- Baked potatoes are one of life's great pleasures, and they're also wholesome and filling. Trouble is, they're neglected, in most cases because the idea of making them often seems too time-consuming. But learn this technique for baking a potato and you'll shave 20 minutes off the usual method.
- With its crispy skin and tender, juicy meat, a roasted chicken is a culinary staple and something that any cook worth their salt needs to know how to do. It only takes 90 minutes to roast a chicken, and for most of that time, you're not doing much of anything.
- Knowing how to make a smooth, velvety gravy is crucial to everything from roasted chicken to mashed potatoes to turkey, and even meatloaf. When the holidays roll around, you'll be happy you learned this one. And so will your guests.

Keyword

Culinary arts, in which culinary means "related to cooking", are the arts of preparation, cooking, and presentation of food, usually in the form of meals.

- Making stock from scratch isn't just something culinary instructors force their students to do. Making your own stock is a great way to use the carcass of a roasted chicken or turkey. Not only that, but homemade stock makes your soups, stews, and sauces taste like they were made by a pro.
- Believe it or not, you don't need an electric appliance to cook perfect rice. All you need to know is this basic technique. The technique works equally well for white rice or brown. All you have to do is extend the cooking time for brown rice.
- That's right, another egg technique. And why not? If you can make perfectly fluffy scrambled eggs, without overcooking or scorching them, you'll earn a lifetime of breakfast bragging rights. The key to this technique is making sure you beat plenty of air into the eggs, which ensures they turn out light and fluffy every time.
- Speaking of bragging rights, this one is a biggie. Anyone who can confidently and efficiently carve a Thanksgiving turkey, without panicking, suffering a nervous breakdown, or making a huge mess of things, will be entitled to claim their place alongside the culinary Olympians.
- If there's one thing people agree on, at least carnivorous people, it's the desire to be able to cook the perfect steak. And no wonder, considering that steaks cooked by professionals can set your budget back in a considerable way.
- But good news! The perfect steak is definitely achievable, and it's a lot easier than you might think. If you're striving for steak perfection, we've got you covered.
- The art and science of culinary emulsions is the key to making a classic oil and vinegar salad dressing. Learn the right ratios of oil-to-vinegar, when to add the seasoning ingredients, and how to keep the oil and vinegar from separating.
- If you're going to go to the effort of making beautiful food, you may as well learn how to keep your food safe. But when it comes to food safety, there's more at stake than your pride. Learn how to prevent food spoilage and food poisoning.
- Not only is making homemade pancakes one of the most basic of culinary skills, once you've mastered the art of making batters, you'll also have a head start when it comes to making related items, like crepes, waffles, muffins, and cakes.
- The technique for cutting butter into flour is at the heart of any preparation featuring flaky dough, from biscuits to pie crust. Bigger blobs of butter make the end product flakier.
- Learning how to make your own mayonnaise doesn't merely free you from the

jar, it also happens to be one of the most satisfying bits of culinary conjuring in the world. This is another skill that separates the novices from the masters. Fortunately, it's mainly a matter of elbow grease.

- Sauces at their core are made up of a liquid, plus a **thickening agent**, along with flavorings and seasonings. Once you understand how the classical sauces are made, you'll be able to start building your own sauces from scratch to enhance your homemade meals.
- Last but not least, the simple, yellow cake. If you can quickly bake a cake from scratch, you'll never be flustered when surprise guests drop by. And when you show up as a dinner guest with a fresh, homemade cake, your popularity will soar.

Keyword

Thickening agent is a substance which can increase the viscosity of a liquid without substantially changing its other properties

Cooking by Moist Heat

In this method, food is put into boiling water or cooked in the steam which comes out from the boiling water. Some common ways by which you cook food by moist heat are described here.

Boiling

Boiling is a method by which food is cooked in adequate quantity of water. For example we boil potatoes, eggs, rice and vegetables. Usually green leafy vegetables such as cabbage, fenugreek and spinach are cooked without adding extra water. Vegetables such as green peas and green beans are boiled or cooked with a little water. Cereals such as rice and pulses are boiled in large amounts of water (1.5 to 3 times). Do you know why? Yes, you are right cereals and pulses need more water to cook as they are dry and they also need more time to cook. Vegetables take less water to cook as they have higher water content.

Some points which must be kept in mind while boiling food are as follows:-

- Wash the food thoroughly before boiling;
- First boil the water and then put the food;
- The water should cover the food completely;
- Boil food in a pan which has a well fitted lid. This way

the steam from boiling water will not go out from the pan and the water will not dry up. Food gets cooked (boiled) faster and fuel is also conserved in the process.

- Do not boil food longer than needed. Once it is soft and tender, take it off the fire. If food is cooked for a very long time it loses its color, shape and taste.
- Over cooking also destroys the nutritive value of food.
- Potatoes and other root vegetables should be boiled with their skins on to retain their nutritive value.

Advantages

Boiling is a safe and simple method of cooking also the food does not get charred. It is suitable for large scale cooking. Boiled food is also digested easily.

Disadvantages

While boiling, water soluble nutrients are lost if the water in which food is boiled is discarded. Some people may not like boiled food as they find it bland. The taste of boiled food can be enhanced by adding lemon or other herbs and spices.

Simmering or Stewing

Stewing is cooking food in a small quantity of water kept below boiling point and for a long time. Once boiling starts, the flame is lowered and the food is allowed to cook slowly. The food and the liquid in which it is cooked are served together. Have you used this method of cooking food in your house? Yes you are right. When you cook dry and hard foods like pulses, meat and even vegetables in dry form you are using this method.

Advantages

In stewing, the juices of the food are retained and the food tastes good. The nutrients are also conserved better.

Disadvantages

Food takes longer to cook.

Steaming

When food is cooked with the heat from water vapors, it is called steaming. How do you steam food? Well, you keep food in a pan in such a way that it comes in contact with steam from the boiling water. The big utensil with a lid is the steamer. It consists of two pans and a tight lid.

The lower pan contains water, the pan above this has tiny holes on its base and the food is kept in it. A tight fitting lid covers this food. When water boils in the lower pan the steam comes into the upper pan through holes and cooks the food kept here. If you do not have a steamer can you devise one? Yes, definitely. Heat water in a pan which has a tight fitting lid. Cover this pan with a clean muslin cloth. The cloth should be of optimum size and should not get in touch with fire. Put food on this cloth and cover it with a tight fitting lid. Your steamer is ready and working

Advantages

Steaming shortens the duration of cooking and helps to conserve nutritive value, color, flavor and palatability of food. Steamed food is light, nutritious and easy to digest. Such foods are especially good for people who are sick or people with weak digestion or for the elderly. Young children also can be served steamed food.

Pressure Cooking

Cooking is a process of cooking in a special utensil which allows cooking with a lot of steam under pressure. Pressure cookers are made of steel or from a mixture of aluminum and other metals and can withstand high pressure. The steam produced is trapped inside the cooker thus increasing the pressure and temperature above 100°C. Rice, pulses, meat, potatoes, roots, beans, and peas are cooked well in a pressure cooker in the shortest possible time.

Advantages

Pressure cooking kills all bacteria and hence the food is safe and hygienic to eat. The food gets cooked faster i.e. almost in 1/3rd time than boiling. This also saves the fuel. Several foods can be cooked together in the pressure cooker by using separators. It is not necessary to immerse food in water while cooking and this reduces the loss of **water soluble vitamins** and minerals.

Disadvantages

If food is cooked for very long, it loses its texture and may even burn.

Cooking by Dry Heat

We all like to eat khakhra, peanuts, bread, buns, cakes and rusks. Do you know how these are cooked? Yes all these are cooked by dry heat which is usually hot air. The temperature used is as high as 200-300°C. Dry heat cooking gives a crisp texture, brown color and pleasant flavor to the foods.

There are three ways of cooking food by dry heat.

Keyword

Water-soluble vitamins are not stored in the body, it absorbs what it needs and then it usually excretes the excess in your urine.

- a) Baking
- b) Roasting
- c) Grilling

Baking

Baking is the method by which food is cooked by placing it inside a heated closed box called an oven. The air inside the oven gets hot due to fire lit at its base or with electricity and the food gets cooked by hot air, when placed inside. Have you seen a bakery in your neighborhood? You must have also seen the big ovens which are heated by fire produced by coal or wood and which are used to bake roti, naan, pav, buns, biscuits, breads and pastries. These ovens are also known as 'bhattis'.

How to Bake

Baking - it's a process so fundamentally simple that the earliest bakers managed to bake with only hot rocks over 4,000 years ago. Yet, because it allows for truly vast culinary complexity, baking is still an area of experimentation for curious chefs today. If you've never baked before, this guide will explain the basic foundations of baking, offer tips for baking specific food groups, and suggest a few recipes to get you started baking. Don't worry - if the ancient Egyptians could do it, so can you!

Baking Basics

1. **Find a heat source.** When a food is baked, it is heated from its outside to its center, resulting in a toasted, crusty exterior, or soft interior. To bake, you need a

heat source that can heat your food sufficiently for it to cook all the way through (for meat dishes, this is especially important, as undercooked meat can contain disease-containing pathogens.) By far the most common appliance used in baking is the oven. Modern ovens allow you to set precise, controlled temperatures for cooking and offer easy access to your food without leaking heat into the surrounding environment. Though less common, it's possible to bake with a variety of alternative methods, including:

- Traditional outdoor ovens such as the Tandoor
- Dutch ovens
- Microwave ovens (technically, this is not baking - microwave radiation is used to warm the food. Still, "microwave baking" recipes exist for replicating traditional baked goods like brownies and cookies in a mug in the microwave.)

2. **Choose a sensible recipe.** Baking projects can range from the simple (staple dishes like bread or chicken breasts) to massive undertakings (like the intricately-decorated desserts you might see on specialty cooking shows like *Cake Boss*. If you're a beginner baker, it's best to stick to something simple - a simple cookie recipe or some easy chicken thighs. Make sure you have all the ingredients in the recipe before beginning - rushing to the store while you're cooking is aggravating and can even tank certain time-sensitive recipes.

- If you can, measure your ingredients out before beginning. It's not essential, but it makes the baking process much quicker.
- Practice good food safety. Wash your hands before beginning any cooking project and after touching any uncooked ingredients which can harbor disease-causing bacteria (especially meat, poultry, and eggs.)
- Wear clothes you don't mind getting dirty or try wearing an apron.

3. **Preheat your oven.** By their nature, all baking recipes require high heats. Set your oven to the temperature called for in your recipe. Then, proceed to the next step! Leave your oven alone while it heats - ovens take time to reach the temperatures required for baking (So don't open it while its preheating because that could result in a longer preheat time). In the time your oven takes to heat up, you can complete the other steps in your recipe. By the time your recipe calls for you to put your food in the oven, it should be at the correct heat. The oven will mostly make a noise once the oven has preheated.

- It's tempting, but don't open the oven's door before you're ready to put your food in. Doing so will release heat trapped in the oven, lowering

the temperature and increasing the time it will take to reach baking temperature.



4. **Follow your recipe.** Every recipe is different - there's no set of rules that will guide you through every baking process perfectly. Most baking recipes, however, contain some or all of the following general steps:
 - Preparing your food (for meat, poultry, and vegetables.) Food placed directly in the oven without any preparation will taste dry and bland at best and will cook improperly at worst. Meats like chicken breasts often need to be marinated, stuffed, and/or browned in a frying pan before baking.



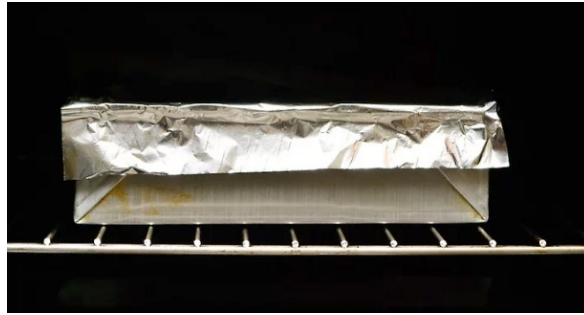
- Mixing your ingredients (for pastries, desserts, etc.) Often, the wet and dry ingredients are combined in separate bowls, then mixed together to form a dough or batter.



- Preparing baking utensils. Pots and pans aren't always immediately suitable for baking. Sometimes, they need special preparation before baking - many baking recipes, for instance, require you to grease your pan.



- Placing the food in or on a baking vessel. Your batter or prepared meat or vegetable won't cook properly if you set it at the bottom of the oven. Usually, your uncooked food is poured or placed into a heat-resistant metal, glass, or ceramic vessel which can easily be removed from the oven (with oven mitts.)



REMEMBER

Vegetables like potatoes need to be pricked with a fork before baking to allow moisture to escape. Almost every recipe contains some sort of preparatory process for the food.

- Cooking in the oven at a high heat. This is what defines baking. All baking recipes need to be baked in an oven (or suitable alternative.) Pay attention to instructions about how far the food should be from the heat source.
5. **Place your food in the oven.** Once you have prepared your food using the recipe's instructions and made sure the oven is preheated, add the food (in its baking vessel) to the oven. Close the oven's door and set a timer for the amount of time your recipe specifies for baking. Now, wait for your food to cook and enjoy the delicious aromas that (hopefully) fill your kitchen.
- Take this opportunity to clean the utensils you used to prepare your food.
 - It's OK to check on your food while it cooks by using an oven light or by opening the oven's door briefly. If you open the door, close it as quickly as possible so that the oven doesn't lose its heat. If you're worried that your dish may burn, check on it halfway through the baking process, then after the halfway point as needed.



6. **Remove your food from the oven.** When your food's time is up and you've checked it to make sure it looks done, remove it from the oven. Make sure to use some form of hand protection - oven mitts are handy because they allow you to retain some of your hand's dexterity when holding your food, but bunched-up towels held carefully between your hands and the cooking vessel work in a pinch.
- Be careful! Pay attention to your food as you remove it from the oven, taking special care not to spill any hot liquids. Baking can be a fun, relaxing process, but if care isn't taken during this step, it can result in painful injury.
 - Set your creation somewhere where it won't burn the surface it's sitting on or any nearby objects. Use a sturdy rag, an oven mitt, or a cooling rack to protect your counter tops.



7. **Let your food cool.** Food is usually far too hot to eat when it comes out of the oven. It also may not have its «final» texture - cookies are almost too soft to hold when they come out of the oven. Finally, some recipes use the heat of the pan to continue to cook the food after it is taken out of the oven. Allow your food to cool before eating it - if your recipe calls for it, carefully transfer your food to a cooling rack, which allows the cool air to reach every surface of your food.



8. **Garnish or decorate your food.** For some foods, external decorations can be primarily used to improve the food's **visual presentation**, for others, decorations are a vital part of the food's flavor. For instance, a parsley garnish is hardly essential for a baked pasta dish, but a plain, dry cake without frosting is incredibly bland. Your recipe may have specific instructions for decoration or even contain a separate list of ingredients for the decorative elements of your recipe (as is often the case with frostings and sauces.) Give your dish some finishing touches, serve, and enjoy!



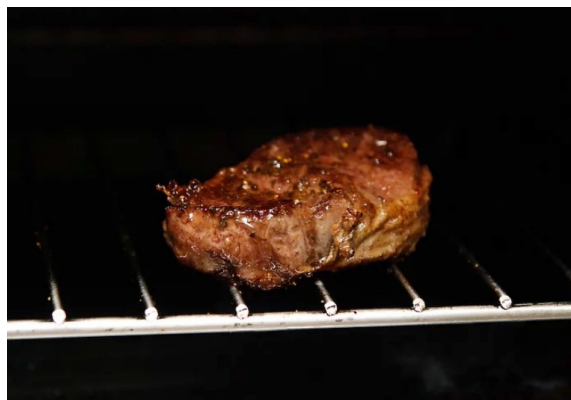
Baking by Food Groups

1. **Bake breads, pastries, and desserts.** When most people think of «baked goods,» they think of breads and pastries - the kinds of foods you can commonly buy at a bakery. These types of foods usually use common ingredients like flour, butter, eggs, sugar, baking soda, salt, oil, milk, starch, cheese, and/or yeast to form a dough or batter which is then baked in sections or as a

whole. Breads and pastries are often flavored with spices, syrups, and other additives to give them unique savory flavors. Here are a few basic points to remember when baking breads and pastries:

- Your dish's final shape is usually dictated by the vessel it is baked in. A loaf of bread baked in a bread pan, for instance, will have a different shape than a ball of dough cooked on a flat pan.
- Baked goods usually require special care to ensure they don't stick to their pan. Butter, shortening, oil, or aerosol sprays are commonly used to keep cooking pans slick.
- Some baked goods which use yeast (especially breads) require extra time for the yeast to "rise." Yeast is a live, microscopic fungus which eats sugar in the dough, releasing carbon dioxide gas (which causes dough to "rise") and other compounds which affect the flavor of baked goods.
- Generally, the higher the proportion of dry ingredients (flour, etc.) to wet ingredients (eggs, oil, milk, etc.) in a recipe, the crumblier the dough will be. One common trick for working with especially crumbly dough is to cool it in the freezer or refrigerator - it will thicken, becoming easier to handle and shape without crumbling.

2. **Bake meat and poultry.** Along with frying, roasting, and grilling, baking is a great cooking method for meat and poultry. The hot, dry air used in baking can give a cuts of poultry a crispy, browned exterior while keeping the interior of the meat moist and juicy. Roasting a large cut of beef or lamb at a low temperature for hours is a great way to ensure you get a moist, flavorful final product that's cooked all the way through. Here are some things to remember when baking meat and poultry:



- When roasting large cuts of meat, have a meat thermometer handy, along with a list of the desired internal temperatures for different kinds of meat. It's much easier to use the thermometer to judge whether the meat's done than painstakingly removing it from the oven, cutting it all

Keyword

Visual presentation refers to the expression of ideas about some matters while using visual aids such as visual multimedia.

- the way through, and placing it back in the oven.
- Some people prefer removing the skin from pieces of poultry, while others prefer leaving it on. When seasoned and cooked, the skin can have a delicious crispy texture, but can slightly increase the fat and caloric content of the dish.
 - There are pros and cons for leaving the bone in cuts of meat (as opposed to removing the bone.) Cuts of meat with the bone in are generally cheaper and, according to some sources, more flavorful (though this is not backed up by hard evidence.) They also sometimes offer additional options for cooking (try stuffing garlic or other herbs into the section of ribcage attached to a bone-in chicken breast). On the other hand, eating around bones can be annoying.
 - Always cook meat and poultry thoroughly. A 2011 study found dangerous Staph bacteria in about half of the meat and poultry samples tested. Don't take any chances - make sure the center of the meat is cooked with no pink spots and that the meat's juices run clear. For bone-in meat, insert a fork to the bone, feeling for any resistance - a fork will smoothly and easily pierce a done piece of meat.
3. **Bake vegetables.** Baked or roasted vegetable dishes are a nutritious addition to any meal. Some, like baked potatoes, stand up as delicious main courses. Compared to frying, baking is almost always a lower-calorie, higher-nutrition cooking option for vegetables. Brushed with a little oil and sprinkled with salt and pepper, vegetables can even be baked to give a crispy, satisfying crust. Here are just a few tips for baking vegetables:
- Generally, vegetables are "done" when they're tender. However, different vegetables tenderize at different speeds - whole squashes, for instance, can take over an hour to soften, while carrots can take half as long. Look up cooking times for your vegetables before attempting to bake.
 - Some vegetable dishes (notably baked potatoes) require you to puncture the vegetable with a fork

or knife before cooking. As the vegetable cooks, water trapped inside will heat and turn to steam. If it can't escape through pre-made holes, the pressure buildup may cause your vegetable to explode!

4. **Bake casserole dishes.** Some baking recipes incorporate multiple types of food (some even cooked separately from the other ingredients) into a casserole-style dish. Often, these dishes use a carbohydrate, like rice, pasta, or a starch, as the central ingredient. The ingredients in these dishes are either layered or combined freely. Usually, the casserole is served directly from the deep-sided plate it was cooked in. Casserole dishes are filling, easy to serve, and often quite rich. Here are just a few examples of baked casserole-style dishes:

- Lasagna
- Ziti
- Potatoes au gratin
- Macaroni casserole
- Moussaka

LOSSES OF NUTRIENTS DURING COOKING

Food can lose its nutritive value in the process of cooking. Correct methods of preparation and storage must be used to preserve nutrients.

Cooking is not only a culinary art but also a source of nutrition, taste and good health. Though we all try to eat healthy and cook healthy, we often overlook or forget that all foods must be had as freshly and with as little handling as possible to retain their maximum benefits. Becoming aware of what happens to the food when it is over-handled, will enable you to adjust how you prepare your food and how best to retain its nutrients.

- The most easily destroyed nutrients are the water soluble ones. E.g. Vitamin B complex and C are lost by exposure to excess water, air, heat, and light.
- Fat-soluble vitamins on the other hand e.g. A, D, E, and K are more stable. Cooking in acid media has a protective effect against vitamins.
- Proteins are not lost much in daily cooking. They may get denatured if overcooked.
- Minerals leach out from boiled legumes but their loss is lesser than vitamins.

Amongst the various cooking methods, microwave and pressure cooking are usually best at preserving nutrients in vegetables because food cooks faster and requires no added water. There is little nutritional loss when reheating leftovers or cooking frozen foods in the microwave. Whichever cooking method is chosen, some care is necessary.

There is some misinformation out there about the benefits of eating everything raw. Specifically, raw vegetables are often credited for providing the most nutritional bang for your buck. This is only partially true. While some nutrients get lost in cooking, others rely on cooking to perform their best. Not only are certain nutrients released in higher temperatures, but cooking can also make certain nutrients more digestible. Better digestion yields better absorption.

Research on carotenoids, a group of pigments found in many orange-yellow-red foods helps make the case for cooking veggies. **Lycopene**, a member of the carotenoid family, gets released during cooking; meaning a tomato eaten raw out of your garden will have less lycopene than if you'd given it some heat.

Cooking is also responsible for helping make proteins in vegetables easier to digest. Evidence also shows most minerals (zinc, calcium, iron, etc.), phytochemicals, and fat-soluble vitamins (A, D, E, and K) are largely unaffected by cooking. Though fiber's integrity is often questioned after cooking, there isn't adequate research to support eating raw veggies only.

Where the raw foods argument wins is with water-soluble vitamins (includes the B vitamins, thiamin, niacin, riboflavin, folic acid, etc. and vitamin C), which tend to be lost with heat. The good news is that much of the majority of these nutrients are highly available in other foods. For example, breakfast cereals cover us on many B vitamins and eating a piece of citrus fruit covers the bases for vitamin C. In other words, variety trumps preparation.

Cooking time, temperature, and added liquid are commonly listed as key components to causing greater damage to heat-sensitive nutrients. Hence stir frying or microwaving are often cited as safer bets than boiling or even steaming. And to add to the argument against adhering only to a raw foods diet- chopping and peeling can affect nutrient content too.

As with most nutrition-related topics, variety is key. Choose the colors of the rainbow and prepare them in various ways. Eat them raw, steamed, and grilled or stir fried and you won't have to worry about extracting every last milligram of possible vitamin C out of a bell pepper.

Also, keep personal preference in mind. People are more likely to eat more of something they enjoy, right? So don't force raw asparagus, for example, when your mouth waters for grilled. When it comes to veggies, more in any form is always better than less of the "the right" form. You'll get more enjoyment- and likely more nutrients overall simply because you savor the flavor!

Do's and Don'ts for Retention of Nutrients

When peeling the skin of vegetables do peel as thinly as possible.

- The nutrients in vegetables and fruits are concentrated just below the skin, so peeling before boiling increases the loss of Vitamin C, Folic Acid and other B vitamins. The peels of carrot, radish, gourd and ginger can be scraped instead of peeling. Peel only when absolutely necessary.
- Do not cut vegetables into very small cubes as each small part comes in contact with oxygen, destroying vitamins.
- Do not soak vegetables in water to prevent discoloration. Almost 40 % of the water soluble vitamins and minerals are lost in the soaking water. If you must soak, use up the soaking water to knead dough, prepare soups and gravies.
- Root vegetables should be boiled with skins on and then peeled after boiling. This helps the nutrients to migrate to the center of the vegetables, helping better retention of its nutrients. Do eat with skin on whenever possible.
- Certain amount of minerals and vitamins are lost even during preliminary washing before cooking. Washing may remove as much as 40% of the thiamine and nicotinic acid. That's why it is preferable to wash rice with minimum amount of water.
- Salads should be prepared just before serving and should be served in closed dishes to avoid excessive exposure to air.
- Do not throw away the excess water drained after boiling rice or vegetables. When preparing cottage cheese, the water left over after curdling is called whey. It is extremely rich in good quality proteins and vitamins and should be used up in preparing gravies, kneading dough or simply had as a refreshing drink after flavoring with lemon juice and salt and pepper.
- Do not keep milk open or exposed to light, as considerable destruction of riboflavin can occur.
- Baking soda makes cooking water alkaline and thus helps retain the color of vegetables as well as speed up the cooking process, BUT it destroys thiamin and vitamin C.
- Cooked vegetables when exposed to the atmosphere before serving may also result in loss of vitamin C. It is preferable to cook vegetables in minimum amount of water keeping the vessel covered and to consume it as soon as possible. Reheating cooked vegetables further destroys vitamins.

Such extra care can save precious nutrients. Instead of cooking only for taste and relish, we should try to get the most from the food.

Vitamin A: It gets oxidized when it reacts with oxygen present in the air and gets destroyed. Cooking at high temperature in an open pan results in food coming in contact with oxygen for a long period of time and this brings about a reduction in vitamin A content. You have already learnt that Vitamin A is a fat soluble vitamin. It gets dissolved in fat when foods like spinach or fenugreek (methi) are deep fried. Temperature as high as 300°C is reached during deep frying which destroys vitamin A rapidly. While preparing carrot potato vegetable, cook in a covered pan in order to prevent the loss of vitamin A.

Keyword

Lycopene is a bright red carotenoid hydrocarbon found in tomatoes and other red fruits and vegetables, such as red carrots, watermelons, gac melons, and papayas, but it is not present in strawberries or cherries.

Vitamin B Complex: It is a group of eight water soluble vitamins. They are generally found together in most foods and share certain properties in common. Vitamin B gets dissolved in water when these foods are washed, soaked or cooked in water. If this water is discarded, it results in the loss of Vitamin B. Rice, pulses and some vegetables are the main sources of vitamin B complex in our diet and therefore care should be taken while washing, soaking and cooking these foods. Another reason for the loss of Vitamin B complex from our food is the addition of cooking soda to the food during the process of cooking. Therefore use of soda while cooking food should be avoided. Milk is a good source of Riboflavin also called Vitamin B₂. It gets destroyed when milk is exposed to sunlight (due to ultraviolet rays). In order to preserve Vitamin B in food, exposure to sun light should be avoided

Vitamin C: It is another water soluble vitamin which is easily destroyed by heat and oxidation. When you cut vegetables and fruits rich in vitamin C and leave them exposed to air for a long time before cooking or eating it, some of the vitamin is lost. Vitamin C is also lost when you wash vegetables and fruits after cutting or if you cut them too fine.

When food rich in vitamin C are cooked for a long time or cooked with soda most of vitamin C is lost. This vitamin is also lost when the water in which the food is cooked is thrown away. Therefore, proper care during cutting, washing and cooking of vitamin C rich fruits and vegetables should be taken. Citrus fruits and vegetables (sour and juicy) have this vitamin in plenty and we can conserve it.

Proteins: Cooking results in softening of proteins in foods such as egg, fish and meat. All proteins present in the food items absorb water and get coagulated by heat. If the coagulated protein is further heated, it loses moisture and becomes dry and rubbery. It also becomes difficult to digest. Addition of acidic ingredients like lemon juice, tomatoes, curd or tamarind juice increases cooking time and makes the protein tough and leathery. These substances should be added towards the last stage of cooking.

When protein rich foods like milk are cooked with sugar for a long time the sugar and protein react to form a brown colored compound and the quality of protein deteriorates.

Oils and Fats: Oil and ghee are used for cooking and frying of foods. During frying the oil or ghee is heated to a high temperature i.e. 300°C. Repeated use of oil for frying is quite a common practice but must be discouraged because when ghee or oil are heated for long periods of time over and over again, their quality becomes poor. Remember: Repeated use of the same oil or ghee as a cooking medium should also be avoided. You should keep changing the cooking oil used in your kitchen. You may choose any of the oils like groundnut oil, vegetable oil, sunflower oil or soybean oil. You have already learnt that once oil or ghee has been used for frying it should be allowed to cool and then sieved and stored in a covered container.

Minerals: Minerals like sodium and potassium dissolve in water. Minerals get lost when food is first cut and then washed and the extra water in which they are boiled, is thrown away. Hence, we should not throw away water in which food has been cooked. While cooking, we should wash vegetables and fruits before cutting.

Nutritional Effects of Food Processing

Freezing, Drying, Cooking, and Reheating

Nearly every food preparation process reduces the amount of nutrients in food. In particular, processes that expose foods to high levels of heat, light, and/or oxygen cause the greatest nutrient loss. Nutrients can also be “washed out” of foods by fluids that are introduced during a cooking process.



Boiling a potato can cause much of the potato's B and C vitamins to migrate to the boiling water. You'll still benefit from those nutrients if you consume the liquid (i.e. if the potato and water are being turned into potato soup), but not if you throw away the liquid. Similar losses also occur when you broil, roast, or fry in oil, and then drain off the drippings.

The table below compares the typical maximum nutrient losses for common food processing methods. This table is included as a general guide only. Actual losses will depend on many different factors, including type of food and cooking time and temperature.

Typical Maximum Nutrient Losses (as compared to raw food)					
Vitamins	Freeze	Dry	Cook	Cook+Drain	Reheat
Vitamin A	5%	50%	25%	35%	10%
Retinol Activity Equivalent	5%	50%	25%	35%	10%
Alpha Carotene	5%	50%	25%	35%	10%
Beta Carotene	5%	50%	25%	35%	10%
Beta Cryptoxanthin	5%	50%	25%	35%	10%
Lycopene	5%	50%	25%	35%	10%
Lutein+Zeaxanthin	5%	50%	25%	35%	10%
Vitamin C	30%	80%	50%	75%	50%
Thiamin	5%	30%	55%	70%	40%
Riboflavin	0%	10%	25%	45%	5%
Niacin	0%	10%	40%	55%	5%
Vitamin B6	0%	10%	50%	65%	45%
Folate	5%	50%	70%	75%	30%
Food Folate	5%	50%	70%	75%	30%
Folic Acid	5%	50%	70%	75%	30%
Vitamin B12	0%	0%	45%	50%	45%
Minerals	Freeze	Dry	Cook	Cook+Drain	Reheat
Calcium	5%	0%	20%	25%	0%
Iron	0%	0%	35%	40%	0%
Magnesium	0%	0%	25%	40%	0%
Phosphorus	0%	0%	25%	35%	0%
Potassium	10%	0%	30%	70%	0%
Sodium	0%	0%	25%	55%	0%
Zinc	0%	0%	25%	25%	0%
Copper	10%	0%	40%	45%	0%

Consuming Raw Foods

The amount of nutrient loss caused by cooking has encouraged some health-conscious consumers to eat more raw foods. In general, this is a positive step. However, cooking is also beneficial, because it kills potentially harmful microorganisms that are present in the food supply. In particular, poultry and ground meats (e.g. hamburger) should always be thoroughly cooked, and the surface of all fruits and vegetables should be carefully washed before eating.

Grilling Meats

Outdoor grilling is a popular cooking method, primarily because of the wonderful taste it imparts on meats. It can also be a healthy alternative to other cooking methods, because some of the meat's saturated fat content is reduced by the grilling process. However, grilling also presents a health risk. Two separate types of carcinogenic compounds are produced by high-temperature grilling:

- **heterocyclic amines (HCAs)** HCAs form when a meat is directly exposed to a flame or very high-temperature surface. The creatine-rich meat juices react with the heat to form various HCAs, including amino-imidazo-quinolines, amino-imidazo-quinoxalines, amino-imidazo-pyridines, and aminocarboline. HCAs have been shown to cause DNA mutation, and may be a factor in the development of certain cancers.
- **polycyclic aromatic hydrocarbons (PAHs)** PAHs form in smoke that's produced when fat from the meat ignites or drips on the hot coals of the grill. Various PAHs present in the resulting smoke, including benzo[a]pyrene and dibenzo[a,h]anthracene, adhere to the outside surface of the grilled meat. PAH exposure is also believed to be linked to certain cancers.

HCA and PAH content in meats can be dramatically reduced by slight alterations in your grilling method. In particular, the following practices will reduce the amount of HCAs and PAHs formed:

- **Select leaner meats.** Leaner cuts of meat are less likely to drip fat on the grill and produce PAH-laden smoke.
- **Marinate meats before grilling.** Researchers have determined that marinating meat prior to grilling, even for just a few minutes, can reduce HCA formation by 90% or more. It's believed that the marinade forms a protective barrier for the meat juices that prevents the HCA reaction from occurring.
- **Grill at lower temperatures.** Lower temperature "roasting" also greatly reduces HCA formation.
- **Prevent flare-ups.** Flames from grill flare-ups cause the formation of both

HCAs and PAHs. Keep an eye on your grill and turn meats frequently to minimize the chance of flare-ups.

- **Don't overcook meats.** While it's important to cook poultry and ground meats thoroughly, be careful not to overcook any meat. Well-done or burnt meats contain higher levels of HCAs than less cooked meats. For thicker cuts of meat, use a **meat thermometer** to measure doneness rather than just guessing.

Keyword

Meat thermometer is a thermometer used to measure the internal temperature of meat, especially roasts and steaks, and other cooked foods.

Enhancing Nutritive Value of Food Items

You are now familiar with the different methods of cooking and ways that help us to conserve nutrients while cooking. It would be brilliant if we could increase the nutritive value of food items without increasing the cost. Can you suggest some ways of doing so? The process of improving the nutrients in food items by special methods is called Enrichment or enhancement of nutrients.

You must understand the purpose of enhancing the nutritive value of food. It helps to–

- provide food which can meet the nutritional requirements of the body;
- provide opportunity for proper selection and preparation of food items;
- provide an opportunity for balanced food;
- improve the flavor and texture of the food;
- make available a variety in food;
- assist in planning the daily menu, keeping in mind the content of the nutrient in the food;
- prevent deficiency diseases in the body; and
- Develop good food habits.

Methods of Food Enrichment

We can enrich the foods using the following simple methods:

Combination: No single food provides us all the nutrients. Hence, we eat a variety of food. For example, we eat roti with vegetables and rice with dal. We include salad, curd, buttermilk

chutney, pickle and papad, too, in our regular meals. Combining foods from different food groups is the easiest way of eating all nutrients. Similarly we can also combine a number of food items in one dish and get all the nutrients from it. Khichadi, dhokla, missi roti are a few examples where we are combining ingredients from different food groups. Such a combination of food items improves the quality of nutrients. Do you know how this happens? Here are some examples. You know that cereals lack certain amino acids. And these are present in pulses. When a pulse and rice are combined, the quality of proteins becomes as good as that of milk. Ideally cereals (rice, wheat, jowar, bajra and maize) should be combined with pulses, nuts and oil seeds like groundnuts, sesame seeds and milk products to get a good quality protein in our diet. Similarly vegetables like spinach, fenugreek and carrots are rich in vitamins and minerals. These when added to a meal can further enhance the nutritive value of food.

Fermentation: Fermentation is a process in which micro-organisms present in the food or added in the form of curd or yeast, change nutrients already present in the food, into simpler and better form. In this process some new nutrients like Vitamin C and B complex are also created.

Can you name some fermented foods? Yes, curd, bread, khaman, dhokla and idli are all examples of fermented food items. Have you ever made bhaturas? These are made by mixing a little curd in maida (refined flour) which is kneaded into dough and kept covered for a few hours. During this time the dough rises. Do you know why? When you add curd to maida you introduce microorganisms which begin to grow at a very fast rate. They start a process called fermentation which makes the dough rise and become almost double in quantity. Similarly, idli is prepared by auto fermentation where microorganisms present in rice and pulse cause fermentation and the batter rises. During fermentation the micro-organisms use up some of the nutrients present in the batter and change them into better quality nutrients. They also produce additional nutrients like vitamin B-complex and vitamin C which were not present in the food earlier. These are two examples of fermented food.

Germination: Take some whole 'moong' or 'channa' and soak it overnight in a sufficient quantity of water. What do you see the next day? Yes, they become big in size and soft to touch. Now drain the water thoroughly and tie or wrap the soaked grains in a wet cloth and keep for another 12 to 24 hours, you will notice that small white shoots have started growing from these grains. This process is called germination or sprouting.

Grains like wheat, bajra and jawar can also be sprouted. These grains can then be dried in shade and roasted lightly on a heavy bottom pan. They can be grounded and used in preparing supplementary food items for young children and elderly people. Pulses like moong, peas and black grams are also sprouted first and then steamed

and eaten after adding salt, chilli powder, lemon juice and chat masala. The time and water which each grain or pulse or legume needs for soaking and sprouting is different. Normally 8-16 hours are needed for soaking and 12-24 hours for sprouting depending upon the season. The cloth in which the soaked grains is tied should be kept moist all the time.

Tips to Maximize Nutrient Retention during Cooking

Here are 10 tips to reduce nutrient loss while cooking:

- Use as little water as possible for poaching or boiling.
- Consume the liquid left in the pan after cooking vegetables.
- Add back juices from meat that drip into the pan.
- Don't peel vegetables until after cooking them. Better yet, don't peel at all to maximize fiber and nutrient density.
- Cook vegetables in smaller amounts of water to reduce loss of vitamin C and B vitamins.
- Try to finish cooked vegetables within a day or two, as vitamin C content may continue to decline when the cooked food is exposed to air.
- Cut food after rather than before cooking, if possible. When food is cooked whole, less of it is exposed to heat and water.
- Cook vegetables for only a few minutes whenever possible.
- When cooking meat, poultry and fish, use the shortest cooking time needed for safe consumption.
- Don't use baking soda when cooking vegetables. Although it helps maintain color, vitamin C will be lost in the alkaline environment produced by baking soda.

Best way to Cook Vegetables to maximize their Nutritional Value

"Eat more vegetables" is long-standing advice for a healthy diet – and for good reason. A diet high in vegetables has been tied to a lower risk of high blood pressure, heart attack, stroke, cataracts, macular degeneration, cognitive decline and digestive-tract cancers. Thanks to their protective mix of vitamins, minerals, fiber and phytochemicals, vegetables are thought to help dampen inflammation, fend off harmful free radicals and boost immunity.

To reap their maximum nutritional benefits, though, you need to cook them right.

While all cooking methods alter the nutrient composition of vegetables (and fruits), some destroy particular nutrients while others actually enhance nutrient content.

Vulnerable vitamins

Vitamin C and many of the B vitamins are the most unstable nutrients when it comes to cooking. Because they're water-soluble, they leach out of vegetables into the cooking water. If you boil your vegetables or microwave using too much water, you'll end up with less thiamine, folate, vitamin B6, vitamin B12 and a lot less vitamin C.

According to a review by researchers at the University of California, Davis, as much as 55 per cent of the vitamin C in vegetables is lost during home cooking (compared with raw). Vitamin C is also easily degraded by heat.

Polyphenols – phytochemicals plentiful in kale, spinach and broccoli – are also susceptible to degradation during cooking.

Fat-soluble nutrients such as vitamins A, E and K are more stable and fare better during cooking. So do carotenoids (e.g., beta-carotene, alpha-carotene, lycopene, lutein), antioxidants found in leafy greens, carrots, winter squash, sweet potato and, in the case of lycopene, tomatoes.

The microwave myth

Water is the enemy when it comes to nutrient losses during cooking. That's why steaming is one of the best methods to preserve easily damaged nutrients, such as vitamin C and many B vitamins. Since vegetables don't come in contact with cooking water during steaming, more vitamins are retained.

Contrary to popular belief, microwaving doesn't kill nutrients in vegetables. In fact, it may outrank steaming when it comes to retaining antioxidants.

A 2009 report in the Journal of Food Science found that compared with boiling, pressure cooking and baking, microwave cooking helped maintain the highest levels of antioxidants in beans, beets, artichoke, asparagus, garlic, onion and spinach. Microwave cooking increased antioxidant activity in eggplant, corn, peppers and Swiss chard. On the other hand, boiling and pressure cooking led to the greatest antioxidant losses.

Cornell researchers found that spinach retained nearly all of its folate when microwaved but lost most of the B vitamin when boiled on the stove.

Microwave ovens use less heat than many other cooking methods and involve shorter cooking times. If you use a minimal amount of water and don't overcook your vegetables, microwave cooking is a nutritional win.

Raw versus cooked

Many people think raw vegetables are more nutritious than cooked, but that's not the case. Cooking vegetables breaks down the plants' cell walls, releasing more of the nutrients bound to those cell walls. Cooked vegetables supply more antioxidants, including beta-carotene, lutein and lycopene, than they do when raw.

Cooked vegetables also deliver more minerals. Spinach, beet greens and Swiss chard are high in calcium, but a compound called oxalic acid binds with calcium. Heating releases bound calcium, making more of the mineral available for the body to absorb. Cooking vegetables also increases the amount of magnesium and iron that are available to the body.

Even so, in some cases vegetables may be better for you raw than cooked. Cruciferous vegetables – cabbage, cauliflower, broccoli, bok choy, Brussels sprouts – contain an enzyme called myrosinase, which, when you chop or chew these vegetables, converts glucosinolates (phytochemicals) to anti-cancer compounds called isothiocyanates.

The problem: Myrosinase is easily destroyed by heat. Cooking cruciferous vegetables reduces the conversion of glucosinolates to their active isothiocyanates, which may reduce their cancer-fighting potential.

According to research published in 2009, steaming led to the lowest loss of glucosinolates in broccoli while stir-frying and boiling (both higher-heat cooking methods) caused the greatest loss.

Fresh versus frozen

Cooking isn't the only way vegetables can lose nutrients. Before fresh vegetables reach your steamer basket or microwave, some of their nutritional value can be degraded during the time they're transported to a distribution center, displayed in the grocery store and stored in your crisper. When possible, buy produce from farmers' markets to reduce the time from harvest to table.

When vegetables are out of season, consider frozen.

Frozen vegetables closely match the nutrient content of their freshly picked counterparts because they're flash-frozen at peak ripeness, a time when they're most nutrient-packed. (Vegetables that are shipped to the produce section of grocery stores

are usually picked before they are ripe, giving them less time to develop their full nutritional potential.)

The bottom line: No one cooking method will preserve 100 per cent of the nutrients and protective phytochemicals in vegetables. So don't limit yourself to one cooking method or eating only salad.

Eat your vegetables roasted, grilled, steamed, boiled in a soup, microwaved and raw. Enjoy them fresh (locally grown when possible) and frozen. The more variety you have, the more likely you are to eat them. And that's the whole point.

Preserve nutrients while cooking vegetables

Do you know that more than half of the nutrients in the vegetables are lost while cooking? And cutting fruits can take away a lot of their nutrients! While eating nutritious food can improve our health and energy levels, the way it is cooked can impact the nutritional value in it. Prolonged exposure to heat and water may cause some foods to lose nutritional value like vitamin B1, vitamin C, and polyphenols.

Washing vegetables

The kitchen rule is to always wash the vegetables first and then chop them rather than doing the other way around. Chopping first and washing afterward can take away vital nutrients from the food.



REMEMBER

Dry cooking methods such as grilling, roasting and stir-frying also retain a greater amount of nutrients than boiling. If you prefer to boil your vegetables, save the nutrient-rich cooking water to add to soups and sauces.

Don't chop small

You should chop the vegetables in large chunks to avoid nutrients getting destroyed when coming in contact with air.



Root vegetables

Vegetables that have roots, like potatoes and carrots should be boiled with skins on and then peeled after boiling as it will help the nutrients to migrate to the center of the vegetables and help in their retention within.



Soaking

If you soak vegetables in water for a long period then, almost 40% of soluble vitamins and minerals are lost. If you really have to soak them, use the remaining water as vegetable stock, or to knead the dough, prepare soups and gravies.



Reheating

Reheating food destroys the chemical structure of nutrients and vitamins. In fact, cooked vegetables that are reheated after being kept in the refrigerator for two or three days lose more than half their vitamin C.



Baking soda

Baking soda makes cooking water alkaline and thus helps retain the color of vegetables as well as speed up the cooking process, but it destroys vitamin C content of the veggies.



Fresh food

Eating freshly cooked food is preferable because the depletion of nutrients could be slowed down. It is a good idea to eat within 4 hours of cooking your food.



Deep frying

Deep frying and heating at a high temperature for a long time can make the protein hard and coagulated. As a result, they are not easily absorbed by the body. Thus, **overcooking** results in loss of precious nutrients.



Excess water

Use the excess water of boiled rice or vegetables in preparing gravies, kneading the dough as it is loaded with a lot of nutrients.



Cooking time

The longer the cooking time and the higher the temperature, the more nutrients are destroyed as most of the vitamins are sensitive to heat and air exposure.



Keyword

Overcooking is a chaotic couch co-op cooking game for one to four players. Working as a team, you and your fellow chefs must prepare, cook and serve up a variety of tasty orders before the baying customers storm out in a huff.

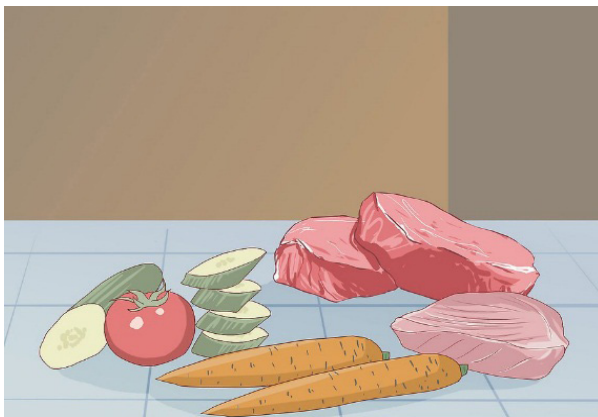
DID YOU
KNOW



The term baking soda is more common in the United States, whereas bicarbonate of soda is more common in Australia and Britain. In colloquial usage, the names sodium bicarbonate and bicarbonate of soda are often truncated; forms such as sodium bicarb, bicarb soda, bicarbonate, and bicarb are common.

Cook Food without Losing Nutrients

Prolonged exposure to water, heat, and light may cause some foods to lose nutritional value. While this isn't a big problem for sources of proteins and carbohydrates, it's a definite concern when cooking vegetables and fruits rich in water-soluble or heat-sensitive vitamins and minerals. To address this problem, stick with cooking methods that are quick and rely on very little moisture, while also picking and storing foods in the most appropriate manner.

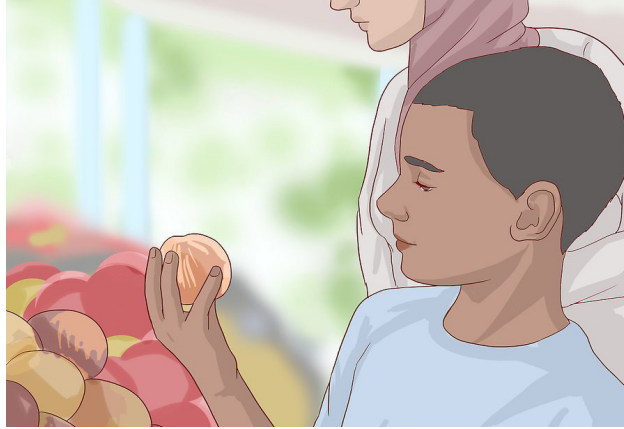


Choosing Nutrient-Hardy Foods

Include more nutrient-dense foods in your diet. Simply put, foods that have a higher nutritional value can usually afford to lose more nutrients than those that have low nutritional content to begin with. Try to include more fruits and vegetables that are dark green or orange, since these typically have more vitamins than produce pale in color. Similarly, lean meats and fish offer more nutrient per bite than fatty cuts of meat.

- It can also be a good idea to note which vitamins and nutrients are naturally more sensitive to air, light, and heat so that you can be more careful when preparing foods that have them. Proteins, carbohydrates, biotin, and niacin are relatively stable. On the other hand, vitamin A, vitamin D, vitamin K, vitamin B-6, riboflavin, and carotenes are somewhat sensitive; vitamin C, folic acid, and thiamin are especially sensitive.





Buy fresh and local. Prolonged storage can cause produce to lose nutritional value before you ever get a chance to cook it. Buy fresh produce when possible, and try to use it within a day or two of purchase.

- Buying produce that's locally grown and in season can also help. Food that has to be shipped across the country may not be properly refrigerated the entire way, causing it to lose nutrients before it even reaches you.
- One way to ensure that you're getting fresh produce is to buy unripened fruits and vegetables. Most produce will have maximum nutritional value as soon as it ripens, so ripening produce at home can be beneficial. Keep produce out at room temperature until it ripens, then use it as quickly as possible.



Opt for heirloom varieties. Heirloom fruits and vegetables can be a little more expensive, but they'll usually be denser in nutrients than their hybrid counterparts. Hybrid crops are grown with an emphasis on yield, rather than nutrition, so they may not contain as many vitamins and minerals.



Buy only what you need. Try to only purchase what you expect to use within two days. Since fruits and vegetables can lose nutrients even when properly stored, it's best to limit the amount of storage time altogether.

- If you do find yourself with more fresh food than you can use within a few days, freeze what you can't eat. Freezing will preserve more nutrients than refrigeration.

Stock up on frozen vegetables. Loosely packed frozen vegetables are usually prepared when the produce is at its peak nutritional value, and the freezing process does a fairly good job of retaining those nutrients. If you don't think you can use fresh vegetables within a few days, it might actually be better to opt for their frozen counterparts.

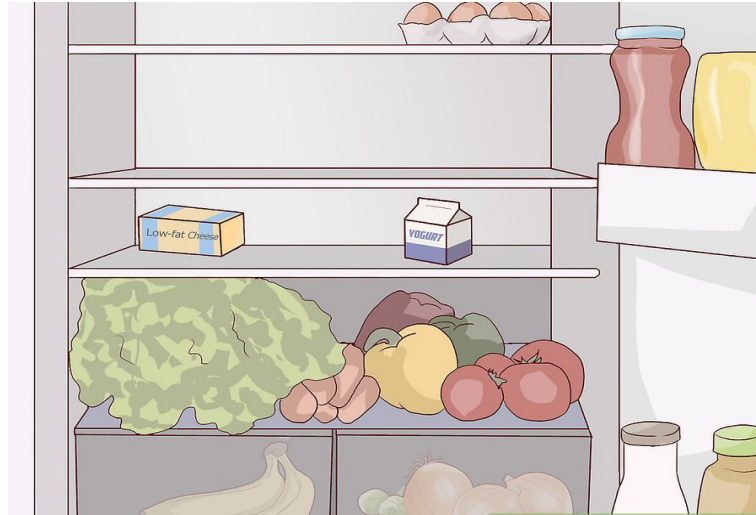
- Avoid using canned vegetables, however, since nutrients can leech out into the water they're packed in. Most canned vegetables also contain added sodium.

Minimizing Nutrient Loss during Preparation

Store foods in cool, dark places. Ripe produce, meats, and dairy should all be stored in your refrigerator. Light and air can destroy nutrients, so you should avoid exposing food to these elements unnecessarily.

- Keep your refrigerator at or below 40 degrees Fahrenheit (4 degrees Celsius).
- Store vegetables in the crisper drawer of your refrigerator.
- Buy milk and juice in opaque containers, or transfer these liquids into opaque containers if their original containers are transparent.
- If you do happen to have canned goods, store them in a cellar kept between

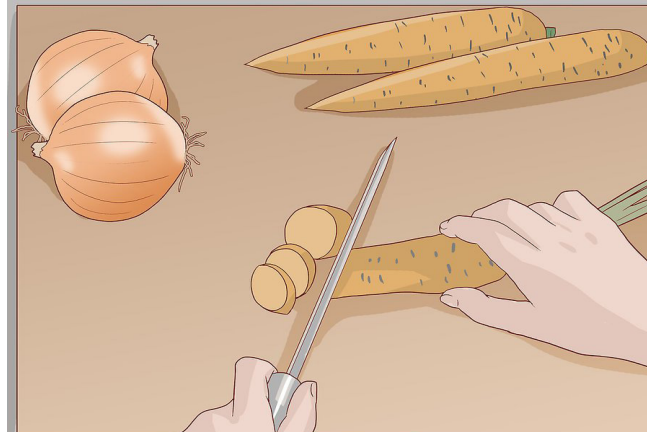
50 and 70 degrees Fahrenheit (10 and 21 degrees Celsius) to prevent nutrient loss.



Use fresh foods quickly. As noted previously, you should purchase fresh produce, dairy, and meat, and use these fresh ingredients as quickly as possible to minimize the nutrient loss that occurs in storage. Keep fresh food you can't use within a couple of days in a freezer set at or below 0 degrees Fahrenheit (-18 degrees Celsius).

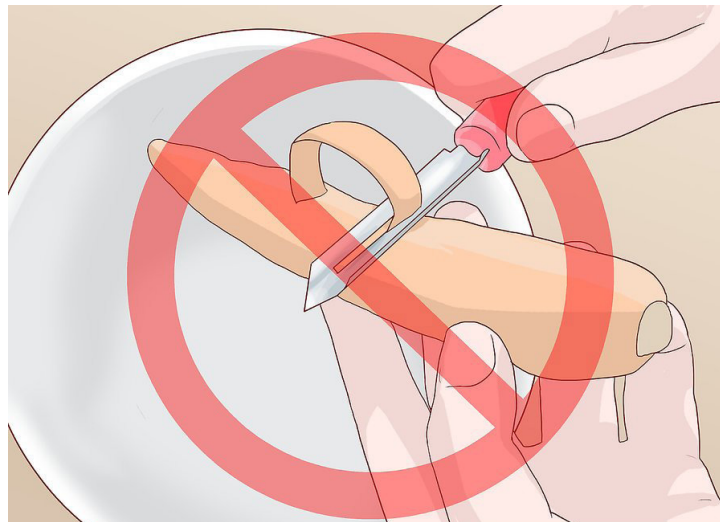


Rinse instead of soaking. When cleaning produce, thoroughly wash away dirt, bacteria, pests, and pesticides under cool, running water. Do *not* soak the vegetables, however, since valuable water-soluble nutrients, like vitamin C, can leech out into the water.



Maximize surface area. Avoid cutting vegetables into small pieces prior to cooking. Instead, cook them whole or in large chunks.

- When vegetables are finely chopped, more of the vegetable is exposed to air and water, making water-soluble and light-sensitive nutrients more likely to leech out.^[15]
- Furthermore, it can be a good idea to let vegetables rest for about 10 minutes after cutting them before cooking or eating them. Some studies suggest that the additional time allows more nutrients to be activated, making them easier for your body to absorb



Keep the skin. Resist the temptation to peel your vegetables. In many cases, the flesh just beneath the skin contains more nutrients than the inner portions. Removing the skins can cause you to either peel away these nutrient-dense layers or expose them to air and water that can dissolve those nutrients away.

Using Nutrient-Friendly Cooking Methods

Microwave vegetables. The microwave can be one of the best ways to retain vitamins and nutrients in vegetables. As a general rule, the best way to prevent nutrient loss is to cook vegetables quickly, with minimum heat and minimum liquid, and the microwave can accomplish this.

- Consider microwaving vegetables with a small amount of water. While some nutrients can be lost when exposed to large amounts of liquid, adding a little water will steam the vegetables in addition to microwaving them, thereby cooking them faster and exposing sensitive nutrients to less heat.

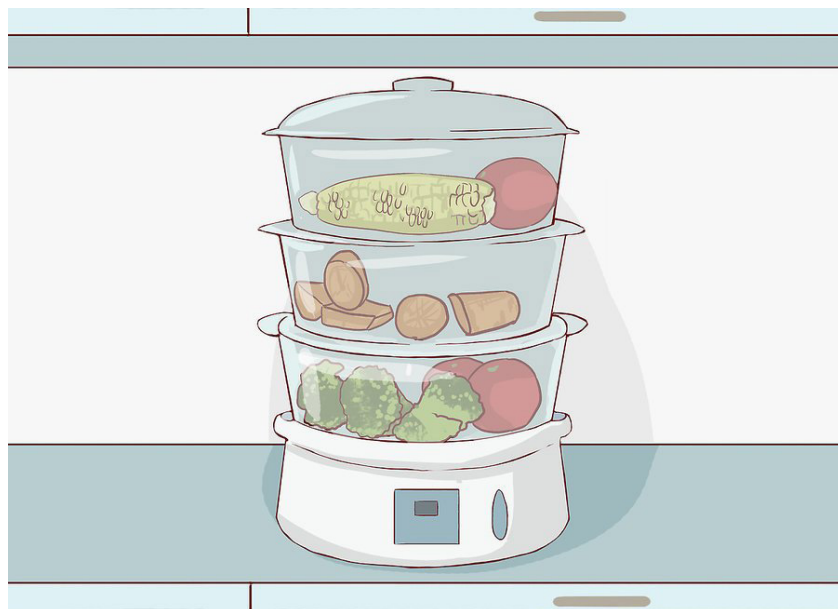


Steam or blanch vegetables. Aside from microwaving, steaming and blanching are probably the best ways to cook your vegetables. These methods use minimal water, minimal time, and minimal heat--minimizing nutrient loss as a result.

- Cook your vegetables until they are tender-crisp (tender enough to bite into without losing all their natural crunch). Vegetables that are tender enough to break apart when you pierce them with a fork will lose a lot of nutrients during cooking.
- Check for color, too. Cooking methods that preserve color, like steaming and blanching, also tend to preserve more nutrients.

Keyword

Bacteria are single-cell organisms that are neither plants nor animals. They usually measure a few micrometers in length and exist together in communities of millions.



REMEMBER

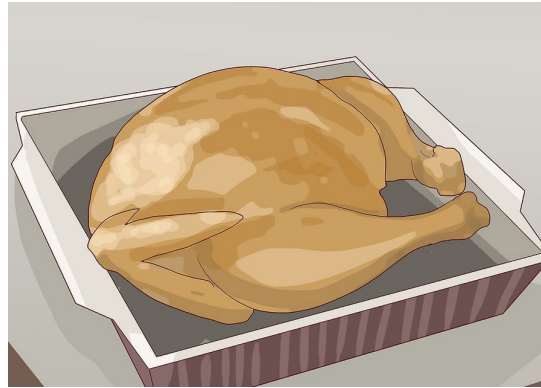
This versatility is important, as each cooking method brings out new tastes, flavours, textures and colours in even the most familiar of dishes.

Stir-fry vegetables and meats. Since stir-frying is a quick way to cook food, you can retain a decent amount of nutrients using this method. Water-soluble vitamins won't leech into the oil like they leech into water, either, which is another benefit of this technique.

- To limit nutrient loss when stir-frying lean meats, cut the meat into bite-sized pieces and coat the pieces in whole wheat flour. The flour acts as a barrier, protecting the meat (and protein) from the heat and moisture that could otherwise cause some loss of nutritional value.
- Also, use as little oil as possible when cooking and choose heart-healthy oils, like canola and olive oil.

Bake meats and fish, but not vegetables. Baking meat, poultry, and fish is a great way to preserve the proteins and other nutrients in these foods. When baking fish, you might also consider wrapping it in tinfoil to limit the amount of contact the sensitive flesh has with the intense heats of the oven.

- Roasting is less ideal for vegetables since the prolonged exposure to high heat can increase nutrient loss. If you like the taste of roasted vegetables, though, stick with hardier options that are more resistant to heat, like beets, onions, celery, and green beans.



Avoid boiling your food. Boiling is probably the worst cooking method you can use if you're concerned about maximizing the nutritional value of your food. Water-soluble nutrients will leech out of vegetables and into the cooking water.

- The only exception to this rule is soup. Boiling vegetables in soup broth will still cause nutrients to leech out, but as long as you drink the broth, you'll still consume most of those nutrients.

Reheat only when necessary. Repetitive exposure to heat will cause more nutrients to disappear from your food, so minimize the amount of reheating you do. When reheating leftovers, only warm up the amount of food you can eat in one sitting instead of reheating the entire batch multiple times.



SUMMARY

- Knowledge of cooking techniques allows you to work with a variety of ingredients and kitchen equipment to achieve consistent, flavorful results in your cooking.
- Deglazing a pan involves adding liquid, such as stock or wine, to a pan to loosen and dissolve food particles that are stuck to the bottom after cooking or searing.
- Vegetables such as green peas and green beans are boiled or cooked with a little water. Cereals such as rice and pulses are boiled in large amounts of water (1.5 to 3 times).
- The steam produced is trapped inside the cooker thus increasing the pressure and temperature above 100°C. Rice, pulses, meat, potatoes, roots, beans, and peas are cooked well in a pressure cooker in the shortest possible time.
- Food is usually far too hot to eat when it comes out of the oven. It also may not have its “final” texture - cookies are almost too soft to hold when they come out of the oven.
- Cooked vegetables when exposed to the atmosphere before serving may also result in loss of vitamin C.

MULTIPLE CHOICE QUESTIONS

1. **How does adding salt to boiling water affect it?**
 - a. Speeds up the process of boiling water.
 - b. It delays the process of water boiling.
 - c. Softens the water.
 - d. Stops the water from boiling at all.
2. **Which of these cutting boards is the most sanitary?**
 - a. Wood
 - b. Bamboo
 - c. Plastic
 - d. All three are the same.
3. **What is meant by blanching a vegetable?**
 - a. Covering it lightly in butter.
 - b. Soaking it in cold water.
 - c. Scalding or dipping it firstly in boiling water prior to freezing or putting it in cold water.
 - d. Massaging it with salt before cooking.
4. **The sauce you are using has become too watery, what is the best way to thicken it?**
 - a. Add Flour or Corn-starch.
 - b. Put it in the freezer.
 - c. Add Sauce.
 - d. Add butter and olive oil.
5. **Which oil is the healthiest to cook with?**
 - a. Coconut
 - b. Olive
 - c. Mushroom
 - d. Soybean
6. **The amount of energy the oven uses to generate microwaves.**
 - a. Boiling
 - b. Smoking point
 - c. Cooking power
 - d. Cooking in fat

7. **Creates high pressured atmosphere by trapping steam in a airtight chamber.**
- Moist heat cooking
 - Pan-broiling
 - Dry heat cooking
 - Pressure cooking

REVIEW QUESTIONS

- Define the useful cooking techniques everyone should know.
- Evaluate the nutritional effects of food processing
- How to enhance nutritive value of food items?
- What are the best way to cook vegetables to maximize their nutritional value?
- How do you preserve nutrients while cooking vegetables?

Answer to Multiple Choice Questions

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (b) | 2. (c) | 3. (c) | 4. (a) | 5. (b) |
| 6. (c) | 7. (d) | | | |

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CHAPTER 5

USE OF GARNISHING

INTRODUCTION

Food garniture forms an integral part in food presentation in gourmet cookery. It is an art that has been practised for years in many food establishments. The first known use is in the 14th century. Moreover it shows no signs of extinction in the restaurants it is practised.

Garnishing involves adding decor or savoury touches to food or drink. The term gastronomy, which refers to the art of good eating, came into usage in France in 1801. A gastronome is one who appreciates good eating while gastronomes are tourists who enjoy regional speciality.

Garnish can be simple or composite. In the former a single food item is used, usually a vegetable, while in the latter several ingredients blend together as well as with the main dish. Composite garnish may also be ordinary items prepared in variable ways or more elaborate like the Financière (à la). Some of the commonly used garnishes were created by the chef of the ancient times.

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Explain the purpose of garnishing food
2. Define the demand of food garnishing

Garnishing is not only restricted to restaurants but it is also adopted in many homes especially when entertaining guests and/or holding anniversaries or other events. To some chefs, garnish is important to the extent that it undergoes cookery. An example is Chicken quenelles (dumpling); a former garnish which nowadays is served on its own or used as part of making Financière (à la). Financière is a cooked classic French garnish which also has ragout of chicken combs, finely shredded mushrooms and shredded truffles as ingredients. Truffles -fungi- were easily available before 1914 (1800 tons per year) but since then only 200 tons are realized due to the use of pesticides in trees which they grow on. The deficit is cleared by use of truffle essence and Madeira to enhance taste.



PURPOSE OF GARNISHING FOOD

Garnish, an embellishment added to a food to enhance its appearance or taste. Simple garnishes such as chopped herbs, decoratively cut lemons, parsley and watercress sprigs, browned breadcrumbs, sieved hard cooked eggs, and broiled tomatoes are appropriate to a wide variety of foods; their purpose is to provide contrast in color, texture, and taste, and to give a finished appearance to the dish.

In the classic cuisine of France, garnishes comprised any accompaniment to a principal dish—vegetables and starch dishes fell under this definition. Further, basic dishes could be varied by the selection of one of a codified array of garnishes. Under this system a chicken, for example, could be served à la archiduc, with a sauce of paprika and cream; à la forestière, with morels and potatoes, à la bouquetière, with an array of individually cooked, decoratively cut vegetables, and so on into hundreds of formulations.



Garnishes might seem like decoration tossed on the side of a plate as an afterthought, but they play a significant role in the diner's experience of food. Usually consisting of an edible component, garnishes brighten the plate, give a clue to the flavor of the meal, complement the taste of the dish or fill empty space on the plate. Garnishes can take many forms depending on the food they are decorating. Herbs, berries, chopped fruit, sauces or vegetable bits are possible garnishes for foods.

- *Visual Appeal:* You experience food with your eyes before tasting it, and the garnish adds a spot of color for your eyes to feast on before the taste touches your tongue or the smell reaches your nose. Garnishes add a spot of color to foods, especially monochromatic ones. Imagine how bland a poached fish fillet and steamed rice on a white plate looks without a bright sprig of parsley or lemon wedge. Even the simplest of garnishes will make a dish appear more appetizing than the same food without garnishing.
- *Flavor Enhancement:* Garnishes enhance the flavor of some dishes. Lemon wedges served with seafood not only add a yellow color to the plate, but the diner can use the juice from the lemon to flavor the food. A mint sprig on top of a fruit dessert lightly infuses the dish with the herb's refreshing

flavor. This is why it is important to choose garnishes that complement the flavors of the food they are served with.

- *Plate Filler:* Some plates look empty, even after the food has been arranged. Garnishes can fill in the empty spaces on a plate, giving the illusion of an abundant dish. This trick is used to surround the serving plates on buffet tables or at salad bars by surrounding the dishes with garnishes of parsley or ice sculptures. A small piece of pale cheesecake in the middle of a large dessert plate appears meager, but decorating the plate with swirls of raspberry or chocolate sauce makes the same portion look more generous. Though the amount of food does not change, the perception of it does just by adding a garnish.
- *Dish Identification:* Some dishes are not readily identifiable just by looking at the food. For instance, it can be difficult to determine if you have a bowl of savory soup of pureed carrots or a sweet dessert soup of pumpkin just by appearance. Both dishes are deep orange in color and thick in texture. Adding a carrot curl on top of carrot soup or a sprinkling of brown sugar and a swirl of cream on a sweet pumpkin soup can help the diner identify what he is about to enjoy.

To cook like a professional chef, people need to understand the importance of food presentation. Nothing completes a delicious meal like appropriate garnish choices. Garnishes are small additions of herbs, specially sliced vegetables, or other items that can be used to enhance the color of a dish, provide contrast, or add a festive finishing touch. When used properly, these additions can help to transform an ordinary meal into a special occasion.



Garnishes can be used throughout a meal to add impact to food choices. For example, curled cucumber spirals are a popular addition for salads. Potatoes are often sprinkled with parsley or chives for added contrast. For desert, ice cream sundaes are frequently served with a **maraschino cherry** on top.

There are many different types of cocktail garnishes as well. Lemon slices, cherries, carrot sticks, cocktail olives, shrimp, strawberries, and watermelon wedges are used on a variety of mixed drinks. Whiskey or brandy based alcoholic drinks typically have minimal additions.

Traditionally, these additions are associated with a specific food item, and many cookbooks give suggestions within the recipe. Many cooks like to experiment with their own ideas to express their creativity in the kitchen. Someone who stumbles on a great option may even manage to start her own culinary trend.

To garnish food at home, a cook will need to keep the right tools on hand. A well stocked spice rack, a sharp knife, a grater, skewers, and an assortment of cookie cutters will make these additions easier to create. Other useful tools include pastry brushes, an apple corer, a melon baller, and a butter curler.

To ensure a crisp look, garnishes should be added to food just before serving. Cooks who need to prepare the meal in advance can store the garnish in an airtight container covered with plastic wrap. Apples, bananas, potatoes, and other items that may discolor can also be brushed with lemon juice to help preserve their appearance.

Although garnishes are sometimes confused with condiments, these two terms are not interchangeable. A garnish is simply decorative, but a condiment is used to add flavor to a particular food item. Examples of popular condiments include ketchup, mustard, barbecue sauce, ranch dressing, soy sauce, mayonnaise, and Tabasco sauce.

Keyword

Maraschino cherry is a preserved, sweetened cherry, typically made from light-colored sweet cherries such as the Royal Ann, Rainier, or Gold varieties.

Garnishing Techniques

Making beautiful garnishes begins with having the right tools for the job. A sharp knife, peeler, zester, etc., will make achieving

a beautiful garnish a lot easier. The second crucial element is having fresh produce or herbs to create the garnish. As always when working with food for photography, it is vital to shop wisely. Shop for the very best example of each item you need and purchase several examples of each item for insurance. If you asked me to name a third element necessary for making beautiful garnishes for photography, it would be ice. Many garnishes are kept fresh, trained into shape, and freshened with a visit in or brushing with ice water.

A garnish is a food item or part of a food item featured in such a way as to enhance the food served. Garnishing is an art. It can be done well with little time or effort by following a few simple guidelines.

Generally, garnishes should be edible and should be an integral part of the food so that they will not be left on the plate. Not all food requires garnishing. Many recipes have built-in garnishes; examples are: beef stew with vegetables, creole shrimp, tossed vegetable salads, and desserts such as pies and cakes.



They should be handled carefully to prevent spoilage and food-borne illness.

- Garnishes should be edible whenever possible and should complement the food, such as lemons with fish and onions with meat. Keep the menu in mind as you plan the garnishes. If wooden picks are used to fasten leaves or petals, caution the guests as you serve.
- Garnishes should enhance the food with color, not overpower it. Consider the

color of the serving dishes and table decorations in creating a total picture. White garnishes can be tinted with liquid food colors for a pastel accent. First add food color to water, and then soak the garnish until you have achieved the depth of color you wish. If you prefer, natural dyes such as beet juice, grape juice and carrot juice can be used.

- Keep garnishes simple, natural and fresh. Do not over-garnish. Combine garnishes only if their colors, proportions and shapes are compatible.
- Always use fresh, high quality ingredients. Dried, withered or mealy foods will not produce attractive garnishes.
- Garnishes can add height and shape to a platter of food.
- An arrangement of garnishes can make an attractive centerpiece.
- Thinner slices and deeper cuts will make vegetable garnishes “bloom” more in ice water. For flowers and curls, allow garnishes to stand in ice water for at least 30 minutes. Longer soaking will cause more blooming. The ice water also crisps and freshens the vegetables.
- Some firm vegetables, such as turnips, become too brittle in ice water and may crack. If you have wrapped or curled slices of brittle vegetables to make flowers, do not soak them in ice water.
- To make brittle vegetable slices more pliable, soak them in a Salt Solution of 2 teaspoons salt in one cup of room temperature water for 10 to 20 minutes. Rinse well before using.
- To transport garnishes, arrange in a single layer on a tray. Dip lightweight towels in ice water, wring them out and place lightly over the garnishes. Cover the tray with foil, sealing the edges.
- For best results, keep the garnishing tools in good condition. Wash them by hand and dry thoroughly. Store them where the edges would not become blunt or dented. Reserve the garnishing knife for delicate jobs only.

Always wash a vegetable before preparing it as a garnish.

Garnishes should be:

- *Simple*, natural, and fresh in appearance.
- *Suitable* in texture and size to the food.
- *Flavorful*. Bland foods require a more highly seasoned garnish.
- Arranged in a manner to enhance the food with which they are used.
- *Used sparingly*. Sprinkle or place in small groupings.
- *Harmonious*. Colors should never clash. Care should be used to produce combinations that will be pleasing to the eye.

Garnishes need not require special equipment: only simple tools are needed; for example, a sharp pointed knife for paring, a serrated knife for bread and tomatoes, and a vegetable peeler for paring fruits and vegetables. Special garnishing tools, such as a V-cutter for zigzag finish or a garnishing knife for making “crinkle or waffle” cuts, may be purchased, if desired.

The following are ideas and instructions for creating more garnishes from fruits and vegetables.

Onion Mum

- Select a medium-sized, well-rounded white onion.
- Peel the outer skin of the onion. Leave the root end intact but cut off any roots.
- Using a sharp knife, start at the top of the onion and make a cut downward toward the root end. Be careful not to go all the way to the root end but stop the cut about 1/2 inch from it. Make this cut deep into the center of the vegetable. Make additional cuts until you have gone completely around the onion.
- When cutting is completed, place onion in a bowl of hot water. This will start the petals spreading and remove the onion smell.
- Let soak for 5 minutes, and then replace the hot water with ice water to allow the flower to bloom further.
- Color the onion mum by placing food coloring in the ice water. Let soak until the desired tint is obtained.
- Remove from ice water. Drain.



Radish Tulip

- Cut a thin slice off the bottom and top of the radish.
- Make 3 cuts from the top of the radish almost to the base, making 6 equal segments.
- Place in ice water until open (overnight if possible). Remove from ice water. Drain.

Lemon or Orange Twists

- Cut fruit into 1/4 inch horizontal slices.
- Slit each slice and twist.

Tomato Rose

- Use a sharp paring knife. With the stem end of the tomato down, begin peeling on the smooth end. Cut around the tomato in a spiral, making a continuous strip about 3/4 inches wide. Do not be concerned if the peel breaks.
- To form the rose, roll one end of the peel tightly to make the center. Loosely roll the remaining peel around the center.
- Use a pick to secure rose base. Cut off excess pick.

Caution: Be sure pick is firmly secured in the rose, so pick will not fall into the food during service.

Storing tomato garnishes is not recommended.

Carrot Ribbons or Curls

- Slice carrot in half lengthwise.
- With a peeler, peel one strip at a time from the cut surface.
- Drop in ice water and the strip will curl by itself.
- Remove from ice water. Drain.

Celery Fans

- Cut celery stalk into 2 or 3 equal lengths.
- Make 1-1/4 inch slashes into one end or both ends of stalk.
- Fan one end or both ends of stalk.
- Drop in ice water.
- Remove from ice water. Drain.

Radish Rose

- Cut a thin slice off the bottom and top of the radish.
- Make 4 cuts across the radish horizontally almost to the bottom and then make 4 cuts across the radish vertically.
- Place in ice water until open (overnight if possible).
- Remove from ice water. Drain.

Types of Garnishes for Food

Despite that annoying sprig of parsley that often graces serving platters and sits atop side dishes before being plucked out of the way, garnishes can be functional and pleasing to the eye. Dishes need to be balanced, and herbs and other garnishes enhance dishes by increasing complexity through an added dimension of flavor. Rethink garnishes to understand what to use and where to use them for an elevated meal.

Leaves and herbs: Some of the most popular green leaves for cooking and other herbs to use are oregano, thyme, rosemary, parsley and basil. Basil, rosemary, thyme and oregano are classic herb combinations for Italian food. Others, such as chives and parsley, are often added to cooked foods like baked potatoes after they are cooked so the herbs do not lose their flavor. Bay leaves and sage are both aromatic leaves that can withstand cooking heat, which often enhances their aromatic qualities. Lighter additions to raw or fresh foods, such as salads, include basil and cilantro. Flavorful contributions to more specifically prepared dishes, such as curry, include mint, lemongrass and dill.

Roots and Greens: Greens are often used to line plates, though they may also be eaten with the dish. In some cases, greens are prepared as a small side salad on a plate, which also serves as a garnish to fill out the plate. While butter crisp, endive and leaf lettuces are classic choices for garnishes, curly kale and purple kale are more unusual options that are interesting to the eye.

A couple of roots that are often prepared and used as garnish are ginger and horseradish. Either root can simply be finely grated and placed on the side of a dish so your guests can add as little or as much spice and heat as they want. Horseradish can also be prepared in a cream sauce to tone down the level of heat it brings.

Edible Flowers: Not many people think to use edible flowers as food decorations to garnish a dish, but they are always a pleasing addition thanks to the bright pop of color they contribute. Though all are not available year-round, there are many options for edible flowers that can be used throughout most seasons.

Calendula flowers and pansies are available year-round. Heart's ease pansies, the deep purple ones, are a beautiful addition because of their deep, rich color. Petals are often plucked from calendula flowers and sprinkled into a salad mainly for their color as the flower is not very flavorful.

Nasturtium can be used from September to April. Marigolds are grown between November and April. Nasturtiums are fragile and look similar to pansies, though they are typically a bright red, yellow or orange color. The leaves of this plant add a peppery kick when added to food, and its seeds can be pickled to taste similar to capers. Marigolds are quite similar to calendula flowers. Apart from adding to salads, you can use the petals of this flower in place of saffron to yield a bright yellow color, particularly in rice dishes.

Cornflowers bloom from November to May, while verbena is often found between December and April, making it one of the latest blooming edible flowers. Cornflowers are a bright purple, fringy looking flower. Purple is the most commonly found, but pink and white varieties are also edible. Verbena adds a subtle lemon flavor to dishes and is available in white, pink and red varieties.

REMEMBER

Herbs like parsley, basil, thyme and rosemary are among the most common garnishes because they are fresh and often brighten a dish or cut through rich, dense flavor palates. Other ingredients that can be used as garnishes include slices of citrus like lemon, lime or orange. Edible flowers and leafy greens also make good garnishes because they fill the plate and add color.

Prepare Good Garnishes

Despite the new-found chill in the autumn air, the desire for a well-presented cocktail does not fall away with the leaves. In fact, people look to these creative concoctions to warm their bodies and their minds as temperatures drop. Regardless of the season, a drink should always be properly adorned would you leave for the beach without the sunglasses? Or build a snowman without a scarf and gloves? Of course not! Then why should you have a cocktail without the necessary accessory of a well-planned garnish?

Garnishes are an interesting fashion trend, sometime the aim is vast complex extravaganzas, and some are simpler or indeed nonexistent! There's how to prepare a simple range of good garnishes.



Consider first the impact you want to make: Thinking about what you can do and how to do it is the most important factor and virtually anything edible can be a garnish.



Consider the way it has an effect: Food is very sense orientated so would the garnish add:

- Visual impact (be it shape, color, visual texture such as shiny or dull or finally its size)
- Flavor impact (such chopped herbs or ground spices)
- Scent impact (such as orange or lemon zest, fragrant herbs or garlic butter)
- Texture impact (such as crispy croutons on a soup)
- Or can it give a mix?



Consider how the garnish will be eaten: The aim of the game is to get the garnish to both improve the meal, but also be part of the meal.



Consider the flavor: If it does not taste good with the meal, there is little point to it. If it adds to, or compliments the flavors then you are going well, but incompatible flavors (such as fried crispy garlic on a dessert) or inedible garnishes could destroy a perfectly cooked meal.



Consider these options

- Lemon, orange or lime slices or half slices, wedges, segments and zest. Even the juice can be used as an aromatic if dappled around the edge of the plate or used in a dressing.
- Chopped herbs such as parsley, basil, oregano
- A sprinkling or a small bunch of stronger herbs, such as rosemary, sage, thyme or lemon grass.
- Think about shapes. Fruits and vegetables can be cut into thin strips, slices, flowers or other shapes, and some twist interestingly (such as thin carrot shreds or slices of green spring onion leaf) when placed into iced water. Chocolate melted into a thin layer and set, as well as pastry, fondant and other moldable ingredients are easy to make shapes from.
- For making vegetable fans, avocado, strawberries, gherkins, mango and cucumbers may be fanned easily. The simplest method for large items such as cucumber is cut them in half lengthwise, then making even cuts also lengthwise (not across the vegetable like normal slices), almost to the end, but leaving the product whole. Then using a flat knife, press gently on the sliced product applying pressure at an angle to fan out the slices.
- Gelatin products also make a fine basis or garnish. By mixing a heated flavored liquid such as a savory clear beef stock, herb infusion (much like making a tea) or sweet syrups, with ordinary **gelatin** (the pack would give a ratio of how much to add as the products do vary). They can be clear, colored or opaque (with adding cream), poured onto a plate and chilled on the fridge to look like a clear mirror like lake, set in a mold or cut into cubes, diamonds etc. to look like jewels.
- Bread makes a wide variety of garnishes, cubed, cut in diamonds or triangles (etc.), shredded and these then fried or toasted in a low oven for color, flavor and crispness. They can also be seasoned with cheese, spices, and over flavorings



Think about making layers of food: While you should aim to be conservative, layers can make a clever impact with no or minimal extra ingredients required.



Keyword

Gelatin is a translucent, colorless, flavorless food ingredient, derived from collagen taken from animal body parts.

- Experiment with tools such as peelers, zesters, melon ballers, apple core cutters, cookie cutters and other tools you have at home.
- Consider other effect type garnishes.
- Take note of garnishes when you go out for a meal, or read a food magazine and see if you can duplicate it for cooking for the friends or family.



Garnish Food Methodology

Knowing how to garnish food can be confusing for anyone who has not tried it in the past. A garnish is often best as a simple, colorful ingredient, so do not feel you need to craft a whole new recipe to pair with the meal. If you are looking for more involved ideas, there are plenty of creative options to try for any type of entrée or dessert.

Selecting a Garnish

- *Use edible garnishes whenever possible:* Garnishes are not only for decoration; they can add new flavors and textures to the meal as well. Using edible garnish also avoids the hassle of having to remove the garnish before eating.



- *Make all inedible garnishes easily identifiable and removable:* Cocktail umbrellas and birthday candles are common examples of inedible garnishes that are difficult to replace with edible material. However, these items are obviously inedible and easily removed from the food, so there is little chance of anyone eating them. Make sure any other inedible ingredients you use share these characteristics.
- *Decide whether to use strong flavors or bland ones:* Bland dishes may call for garnishes sprinkled with herbs or spices, but every garnish does not need to have a strong taste. If the food already has a complex flavor, it is usually a good idea to avoid flavorful garnishes which could clash with other ingredients.



- *Vary the color and texture:* Pick a color that contrasts with the color of the dish, so the garnish is more visible and appealing. Similarly, a small piece of a crunchy vegetable adds variety and interest to a soft dish.
 - Two-ingredient garnishes can be laid out in alternating layers on a plate, creating a contrast between two colors. Try slices of tomatoes and cucumbers, or two different colors of gelatin cubes.



Keyword

Tableware are the dishes or dishware used for setting a table, serving food and dining. It includes cutlery, glassware, serving dishes and other useful items for practical as well as decorative purposes.

- *Arrange the garnish on the dish:* Garnish may catch the diners' eye more readily on a contrasting background. If the food itself contains several colors, place the garnish directly on the plate or bowl. Most garnishes show up well on white **tableware**, but bright-colored garnishes may work well on a dark ceramic dish as well.
- *Keep the temperature in mind:* Frozen garnishes may melt if placed next to hot food. Even if not in danger of losing its shape, a large, cold garnish may be unpleasant to eat with a hot soup, and a hot garnish likely would not pair well with a cold dessert.

Garnishing with Fruit

- *Learn when to use fruit garnishes:* Most fruits are sweet and best used to decorate desserts, or salads when used in small quantities. Citrus fruits, such as lemons and limes, are excellent for adding color and flavor to dishes containing fish and lightly flavored meat, as well as other fruits and desserts.
 - Citrus fruits can be made into attractive garnish simply by cutting them into thin circles, wedges, or twists.
- *Cut simple fruit squares:* Choose a firm fruit with segments or a varied internal appearance, such as an orange or kiwi. Cut out a rectangular block from the center of the fruit, and then slice this into flat squares.
- Use several fruits of different colors for variety. Some of these can be fruits with a plainer appearance, such as cantaloupe or mango, cut into squares or scooped out into spheres with a melon baller.
- *Create a strawberry fan:* Wash and dry a strawberry. Using a paring knife, make four or five slices from the tip of the strawberry toward the top, but leave a small piece around the stem intact. Gently fan out the slices of the strawberry on the plate you wish to decorate.
- *Cut a Maraschino cherry into a flower shape:* Cut a cherry two-thirds of the way through the fruit. Turn the cherry and make two more cuts, dividing the cherry into six “petals” without cutting them apart from each other. Spread the petals carefully apart and press them flat.
 - Optionally, add a small piece of candied fruit or other edible material to the center, and place one or two mint leaves underneath it.



- *Create sugared fruit garnishments:* Wash any firm fruit, and then blot dry with a paper towel. Separate an egg white into a bowl and beat it until

it becomes foamy. Brush the egg white onto the fruit in a thin, even coat, then sprinkle with white granulated sugar for a frosted appearance.].



- *Make an apple swan:* If you have a little more time and a sharp knife, try making a swan design out of an apple. Large radishes or other hard, large fruit or vegetables can be used instead.
- Other complex designs can serve as centerpieces or garnishes for special occasions. You can find many of these online by searching for Thai fruit carving instructions, or for “food art.”

Keyword

Citrus Fruits are the great source of Vitamin C and also used to treat common cold.

Citrus Garnishing Ideas

Citrus garnishes would not hold all day; in fact, they need to be cut immediately before being placed on the hero plate on set. You often cut citrus fruit garnishes on a work table near the set after final adjustments are made to the other food on set. All fruit elements of the citrus shot were cut and placed on the plate immediately before final photography. Both the fruit and plate were spritzed with cold water in this shot to convey freshness as well as to keep the fruit in hero condition. A variety of cuts for citrus fruits are depicted in this shot. Because most citrus fruits have seeds, good hero slices and wedges can occasionally be hard to find. When you plan to cut **citrus fruits** for photography, it is a good idea to over purchase those fruit items.



Brightly colored fruit garnishes add a sense of freshness and fun to foods. They are so naturally beautiful it does not take much effort to make them look spectacular. Look for citrus fruits that are evenly shaped, blemish-free, and at the right stage of ripeness.

In general, the firmer the fruit, the easier it is to work with and the longer the finished garnish will stay fresh and attractive. Any kind of citrus works: use lemons, oranges, or limes to start garnishing.

Candied Citrus Peel

Tiny strips of candied citrus peel are the perfect topping for everything from espresso to cakes.

To candy citrus peel garnishes:

- Wash fruit; dry thoroughly. Cut strips of peel from fruit with vegetable peeler.



- Place the strips of peel on cutting board. If necessary, scrape cut side of peel with paring knife to remove white membrane.



- Cut peel into very thin strips.



- Combine equal amounts of sugar and water in small saucepan. Bring to a boil over medium heat, stirring constantly with wooden spoon. Boil 3 minutes. You will need about 1-1/2 cups each of granulated sugar and water for each piece of whole fruit.
- Carefully add strips of peel to boiling mixture.



- Reduce heat to low. Simmer 10 to 12 minutes or until peel turns completely translucent.



- Place wire strainer or sieve over bowl. Spoon strips of peel into strainer or sieve; drain thoroughly.



Kitchen Essentials and Basic Food Preparation

- Add additional sugar to a re-sealable plastic food storage bag. Add strips of peel; seal bag. Shake until strips are evenly coated with sugar. Remove strips from bag; place on waxed paper to dry thoroughly.



- Garnish as desired.

Citrus Knots

Place a citrus knot on top of a lemon meringue, orange cream, or key lime pie to give a hint of what's inside.

To tie citrus knot garnishes:

- Wash citrus fruit; dry thoroughly. Cut strips of peel from fruit with vegetable peeler.



- Place the strips of peel on cutting board. If necessary, scrape cut side of peel with paring knife to remove white membrane.
- Cut strips into 3-1/2 X 1/8-inch pieces.
- Tie each piece into a knot.
- Garnish as desired.



Citrus Loops

At the next dinner party, garnish the edge of each water glass with a citrus loop. This also works well on the edge of salads placed in beautiful bowls.

To make citrus loop garnishes:

Wash citrus fruit; dry thoroughly. Place fruit on cutting board; cut crosswise into thin slices with utility knife.



- Cut each slice in half crosswise.
- Carefully cut each half slice between peel and fruit with paring knife to loosen peel from fruit, cutting about three-fourths around the inside of the peel. (Fruit should remain attached to about one-fourth of the length of the peel.)
- Holding free end of peel, carefully curl it under, tucking it up against attached part of peel.
- Garnish as desired.

Scored Citrus Slices

Pair scored citrus slices with fresh herbs and garnishes on pork or fish dishes.

To score citrus slice garnishes:

- Wash citrus fruit; dry thoroughly. Cut a shallow groove into the peel with citrus stripper or tip of grapefruit spoon, cutting lengthwise from stem end

to other end.

- Continue to cut grooves about 1/4 inches apart until completely around fruit.
- Place fruit on cutting board; thinly slice crosswise with paring knife.
- Garnish as desired.

Herb Garnishes

When snipped herbs are used as a garnish or element in a dish, the best way to get hero quality shapes and pieces is to cut the herbs with sharp scissors. Because small quantities of items are used for garnishing, and since they are usually a strong interest element in photography, you want to start with beautiful examples of the specific herbs you choose to use. Due to the tender nature of herbs, chopping with a knife can often bruise them. If camera focus is sharp where the herbs will be placed, the bruising will show. Scissors help to reduce the appearance of bruising. Again, the herbs should be snipped immediately before they go to set as a garnish. When you cut cilantro or parsley with **scissors**, you usually cut the interesting outer edges of each leaf. This gives a pleasing shape to the individual pieces and makes the garnish identifiable.

Keyword

Scissors are hand-operated shearing tools. They consist of a pair of metal blades pivoted so that the sharpened edges slide against each other when the handles (bows) opposite to the pivot are closed.



Once herbs are snipped, they are extremely tender. If you try to pick them up with the fingertips, they will crush together, sticking in a clump. They will also bruise. The best way you have found to distribute them onto the hero food is to slide a small spatula under them and to tap the spatula with my finger or another spatula to shake them off. If you hold the spatula directly over where you want to place them, the pieces will fall in a random pattern most pleasing for a sprinkled appearance. If any of the flakes or herb pieces land where you do not want them to reside for final photography, remove them with tweezers.



DEMAND IN FOOD GARNISHING

The guests' experience of food and beverage starts when the serving staff brings beautifully garnished food with the appropriate accompaniments on their table. The service staff turns a guiding hand to the guests in suggesting which accompaniment will go well with the main food the guest is interested in having.

It is the way of decorating the food or beverage so that it is aesthetically appealing for the guests/customers. It works on the plate. Garnishing also harmonizes color, flavor, and taste of the main dish.

Chopped herbs or small twigs of herbs, leafy vegetables, twirls of carrots or tomatoes, swirls of fresh cream, fruit glaze, chopped nuts, seedless berries, and lemon zest or slices are used for garnishing.



REMEMBER

Drinks like cocktails and mocktails are garnished using fruit pieces and zests, mint leaves, and castor sugar. Milk based drinks are garnished mostly with fruit pieces, cherries, chocolates, or nuts.

Desserts are garnished with dried fruits, fresh fruit zests, glazes, roasted or candied nuts, frostings, chocolate curls, chocolate coated butts, or small pieces of sugar arts.

The following are some important Dos and Don'ts to be understood in food garnishing –

- Place it where it seems just perfect.
- Contrast color schemes work best for garnishing.
- Do not overdo garnishing; this overshadows the main food.
- Do not reuse the garnish.
- Avoid being too elaborate.

Accompaniment

There are dishes that come along with accompaniments. These accompaniments complement the main food and enrich its taste. It provides an aesthetic value to the main dish. The accompanying food or beverage itself can have a garnish of its own. An accompaniment can be inside the main dish or in a separate bowl.

The following are a few different types of accompaniments –

- Sauces and Dips
- Pickles
- Dressings
- Chips and Wedges
- Salads
- Gravies

- Beverages such as soft drinks or wines
- Breads



For example, grilled Hake fish served with potato chips and Pizza served with garlic bread, cheese dip, and a carbonated beverage.

Popular Food Items with their Accompaniments

The following are a few popular food items with their garnishing and accompaniments –

Food/Dish	Garnish	Accompaniment
Soups	Chopped Cilantro/Fresh leaf of Basil/Croutons/ Cream swirls	Salads/Breads/Crispy starters
Bouillabaisse	Chopped herbs	Country bread slices spread with <i>Rouille</i> , a spicy mayonnaise.
Farineaux Spaghetti	Fresh basil leaves	Grated cheese, pepper powder, and Neapolitan tomato sauce.
Veg/Non-veg burger	Not essential	Potato/ Sweet potato chips, aerated drinks or ale.
Indian Snacks Idli, Vada, and Dhokla	Chhunk of clarified butter with mustard and cumin seeds, and curry leaves.	Coconut-Cilantro-Green Chili Chutney. Idli and Vada are often accompanied with lentil curry called 'Sambar'.
Indian Onion or Chili Fritters (Pakoras)	Not essential	Tomato sauce or hot and sour chutney.
Mutton/Chicken/ Veg Biryani	Chopped coriander and caramelized onion stripes.	Liquid gravy with lemon wedges and onion-tomato-cucumber salad in curds.
Indian one dish meal Pao-Bhaji (Pao=bread, Bhaji=Spicy Stew)	Pao is garnished with butter and Bhaji with chopped cilantro and butter.	Onion-Tomato-Cilantro salad with lemon wedges and mango pickle.
Barbequed/Braiiied Beef/Game Meat	Herbs	Sauces
Roast Beef	Herbs, Butter	Horse Radish sauce
Fruit Salad	Castor Sugar	Yogurt

Irish Stew	Herbs	Worcestershire sauce and Pickled red cabbage.
Poulet Grille Americain (American Grilled Chicken)	Herbs in butter.	Addition of grilled dices of tomato, mushroom, capsicum, and potato.
Sage and Onion Stuffed Goose	Pieces or Stripes of salad vegetables.	Apple sauce and roast gravy.
Fromage Assorti (Assorted Cheese)	Castor sugar for crème cheese.	Celery, Radish, Water Crest, and Cracker Biscuits.
Veg/Non-veg Stew	Chopped fresh coriander	Steamed Rice or Bread
Ice Creams	Vanilla/Chocolate/Raspberry/Strawberry Sauce, chopped nuts, Colorful candies, Rose Petals	Waffle sticks or stripes.

Cheese and Wine Pairings

There are no stringent rules for which wine goes well with which cheese but one must observe the following guidelines while pairing wines with cheese

- Select wine and cheese originating from the same region.
- Dessert wines accompanying the desserts must be sweeter than the dessert itself.
- Cheeses go well with wines of contrast taste.

Wine	Cheese
Champagne Brut, Extra Brut (Dry)	Brie, Camembert
Champagne Sec, Demi-Sec, Doux (Sweeter)	Cheddar, Gouda, and Parmesan
Shiraz	Cambozola
Red Bordeaux	Cheddar
Chenin Blanc	Blue, Camembert
Pinot Blanc	Baby Swiss, Brie, Camembert, and Feta
Cabernet Sauvignon	Blue, Cheddar, Gorgonzola, Gouda, and Parmesan
Cabernet Franc	Blue, Brie, Cheddar, Gorgonzola, and Goat Cheese
Chianti	Mozzarella and Parmesan
Port (hails from Portugal and sweeter than other wines)	Blue and Gorgonzola

Chocolate and Wine Pairings

Lighter chocolates contain more milk based-products and less chocolate. Chocolates with light and elegant tastes are paired best with light-bodied wines. The ones with more bitter taste are paired with intense flavored full-bodied wines.



Standardized Recipes

A critical standardized recipe is one that, “has been tried, adapted, and retried several times for use by a given **food service** operation and has been found to yield the same good results under same procedures, equipment, and quantity and quality of ingredients.”

Generally, popular menu items are developed using standard recipes, ingredients, and presentation.

Benefits of Standardized Recipes

A standardized recipe can bring in the following benefits –

- Consistency in food quality.
- Consistency in nutrients per unit serving.
- Increase in customer satisfaction.
- Control on cost of food.
- Prediction of accurate yield.
- Reduction in food leftover and record keeping.
- Increase in the confidence of employees.

Components of a Standardized recipe

A typical standardized recipe is composed of the following description –

- **Recipe name/title** – It is the name that describes the recipe in brief.
- **Recipe section** – It is the section that the recipe should be classified under (grains, starters, desserts, etc.)
- **Ingredients** – Types (fresh/canned/cooked/uncooked/

Keyword

Food service defines those businesses, institutions, and companies responsible for any meal prepared outside the home. This industry includes restaurants, school and hospital cafeterias, catering operations, and many other formats.

ground, etc.)

- Weight and measures of ingredients
- **Method** – This is a set of instructions to prepare a particular recipe. A method includes guidelines for steps such as mixing, selecting pans, and setting the right cooking temperature.
- **Time** – This includes preparation time, cooking time, and serving time.
- **Serving size** – It is the portion of food to be served.
- **Critical Control Points (CCP)** – They are control measures taken to avoid food safety hazards. Every CCP includes control of time, preparation, and cooking temperature.

Critical Standardized Recipes

Predicting the total yield for a particular number of customers and calculating weights of ingredients accordingly is important in standardized recipes.

For recipe to be prepared for new lot of customers, the total yield changes. The new yield can be calculated in the following two steps –

Step 1 – Calculate conversion factor as –

Conversion Factor = New Yield / Old Yield

Step 2 – Multiply the measure of each ingredient by the conversion factor to obtain the new yield –

New Yield = Old ingredient quantity × Conversion factor

How Are Garnishes Chosen?

Garnishes are selected in accordance with how they will balance a dish and benefit the aesthetics of the presentation. Though some garnishes are purely for food decoration, many are there for function.

When considering the flavor profile of a dish, there are several key elements to balancing the flavor while creating complexity as well. Fattiness is diminished by acid and heat, just as sweetness is tamed by saltiness. Notes or subtleties of garnishes, such as smokey, clean and fresh aromatics, tartness or a lot of spiciness, enhances the flavors that are already present while introducing that additional component. For example, beef is sometimes accompanied by horseradish, which adds heat, though that heat can be toned down if mixed with a dairy product like sour cream. The heat of the horseradish and the creaminess of the sour cream balance the smokiness of the beef to create a more complex dish.

Garnishes that serve a visual appeal are often used on plates of hors d'oeuvres or appetizers. This type of garnish usually fills an otherwise lacking plate.

If you're serving deviled eggs on something other than a deviled egg platter, butter crisp or leaf lettuce can be used to line the plate before arranging the egg halves on top. Usually a sprig of dill is also used to top the deviled egg halves, which is a visually pleasing addition that brings a fresh, lifting flavor to the egg and its relish mixture.



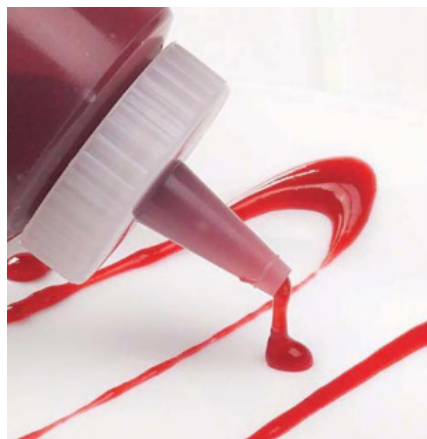
Dandelion use in Garnishing

The quintessential garden and lawn weed, dandelions have a bad reputation among those who want grass that looks as uniform as a golf course, but every part of this common edible weed is tasty both raw and cooked, from the roots to the blossoms. Dandelion leaves can be harvested at any point in the growing season, and while the smaller leaves are considered to be less bitter and more palatable raw, the bigger leaves can be eaten as well, especially as an addition to a green salad. If raw dandelion leaves do not appeal to you, they can also be steamed or added to a stir-fry or soup, which can make them taste less bitter. The flowers are sweet and crunchy, and can be eaten raw, or breaded and fried, or even used to make dandelion wine. The root of the dandelion can be dried and roasted and used as a coffee substitute, or added to any recipe that calls for root vegetables.

A pretty garnish appropriate for a number of dishes is a dandelion onion. This garnish resembles a white carnation and can help with color separation between items in a salad or on a plate. A green onion with a 1/2- to 3/4-inch-diameter bulb works best to make this garnish. Use a sharp paring knife to remove the root plus about 1/4 inch of the bulb. Make a cut perpendicular into the center of the cut edge where the root was removed, being careful not to cut through the top of the bulb, of the bottles can be cut with sharp scissors so the nozzle end will accommodate thicker sauces and sauces having small chunks.



Be sure to test the applicator bottle with the specific sauce you are applying so the size of the opening of the tip can be adjusted if necessary before you go to set. Keep in mind that if the opening is too small or too large, the application of sauce might not give you the desired results. Always test the sauce and applicator bottle before going to set. Note that it may be necessary to strain larger chunks out of a sauce if they clog the tip of the applicator bottle. You will need to determine if another application method would be easier for the particular sauce. If the chunks are a desired element in the appearance of the sauce, and you want to use the applicator bottle method to apply the sauce, the chunks can be added to the sauce areas with tweezers after the sauce has been applied to the hero plate or food.



Don't Forget Frying

Deep fried garnishes can be beautiful. They are also beneficial for contributing a higher profile to the silhouette of a shot or specific food item. The filet is topped with deep-fried leek rings that were lightly breaded with a tempura batter. Tempura batter mix can be found in most markets and is easy to use. Tempura batter makes a light coating to vegetables and other foods for deep frying. One garnish that is beautiful and not used often is deep-fried parsley. It can be dipped into tempura

batter or fried au natural. Just make sure the parsley is not wet before plunging it into hot oil to deep fry. Once fried, place the items on a tray lined with a couple of layers of paper towels. Immediately take the tray outside or into a well-ventilated area and spray the fried items with two coats on all sides with Krylon crystal clear spray paint.



This coating will keep most fried items looking fresh for 1 to 2 hours. It might be necessary to re-spray the items before building on the hero plate. However, if the fried food items become limp, there is nothing you can do to revive them and you will need to fry additional garnishes. Supplies used to complete garnishing techniques:

- Henckels 3-inch paring knife, kitchen scissors, and sharpening steel
- Messermeister 6-inch Santoku knife
- OXO Comfort Grips utility cutting board, herb strip-per scissors, lemon? Aster, Y peeler, swivel peeler
- EMS style 24, part #72880-DB 90% bent-tip Dumont tweezers and style 24, #72880-DS straight-tip tweezers
- Hamilton Beach grater
- STRETCH-TITE plastic food wrap
- Cardinal International glass prep bowls
- Arcoroc oval plates
- Wilton applicator bottle, 9-inch angled and tapered spatulas
- Le Creuset Cool Tool
- Fisherman's fly-tying scissors

After all of the hard work of designing a food shot, shopping for that perfect “strawberry” to shoot, styling the food items, and lighting the shot for the masterpiece you hope to create, other aspects must still be considered to produce an image that will make viewers or clients want to taste or buy or, even better, pay you for the efforts. If you have not taken steps prior to shooting, during shooting, and then after shooting to handle the files correctly to match output for print or the Web, you and the client might not be satisfied with the final results.

The following is in no way inclusive of all of the steps one needs to take to ensure a successful result when shooting food and processing. The major aspect to strive for is color! Correct color. Accurate color that can be reproduced from the product itself, to the camera, to the monitor, and to your printer or printing press is the goal. No one wants to eat or pay for green eggs, gray meat, or blue bananas.

Use Ice Water to Make Curls

One of my favorite garnishes can be used as an element in a salad or vegetable presentation. The loose curls created by this technique are beautiful and visually interesting. With a paring tool, slice the entire length of a carrot or zucchini to remove only one strip of the outer skin, exposing the interior of the vegetable. The next slice, removed with the paring tool, will be edged with the vegetable’s natural covering. Roll this long slice into a tight roll and then choose one of two methods to hold this roll together.



In the first method, a square of plastic wrap can be tightly bundled around the roll to hold it in the lolled position. I.e. plastic-wrapped vegetable can then be plunged into ice water. Use ice to hold the bundle submerged in the ice water. For the second method, wrap black matte tape around the rolls to hold them in position. However, you must be careful not to get the tape wet while you are wrapping it around the

roll because the tape will not stick to itself if wet. Wrap the tape around the rolled vegetable, beginning with the middle of a 4-inch length of tape.

When the tape has reached around the vegetable roll, the ends of the tape will stick together if still dry and will stay together in the ice water. Plunge the taped roll into an ice water bath for at least 15 minutes. These taped rolls will last most of the day until needed on set. You will need to keep ice present in the bowl. Note that carrots will bleed a little color into the water if left for over an hour. When you are ready to place the vegetables on set, carefully remove the tape and the vegetable roll will unwind slowly. They do not last long on set, so have alternate heroes waiting in the bowl of ice water with tape still in place.

Tame and Revive Strawberry and Tomato Tops

It is a wonderful trick that works on strawberry tops and on tomato tops. Cut a square of paper towel that is just the right size to cover the green top of the fruit. If the fruit has a stem, cut a slit from the outside edge of the paper towel square into the center to make room for the stem to extend out of the paper towel topper. Wet the paper towel.



Holding the green top of the vegetable down in place with the fingers lay the wet paper towel over the green top. It is sometimes necessary to use a piece of plastic wrap to wrap around tomatoes to hold the paper towel and greens in place.

DID YOU KNOW ?

Many garnishes are not intended to be eaten, though for some it is fine to do so. Parsley is an example of a traditional garnish; this pungent green herb has small distinctly shaped leaves, firm stems, and is easy to trim into a garnish.

Keyword

Plastic wrap is a form of food packaging consisting of a thin film of flexible, transparent polymer that clings to itself and to food containers to form a tight seal.

The plastic wrap also forces the top to lay flatter and in a preferred position on tomatoes. The fruit tops will both perk up and hold the shape you have given them after about 1 hour, so prep them with this technique early on shoot day. Keep the paper towel damp and they will hold a few hours while waiting to go to set. If the fruit is not wrapped with **plastic wrap**, it will be necessary to spritz the paper towel regularly with water to keep it moist until the fruit is needed on set.

Sauce a Plate

Applicator bottles have a variety of uses in food styling. They are perfect to apply sauces to food on set. The tips of the bottles can be cut with sharp scissors so the nozzle end will accommodate thicker sauces and sauces having small chunks. Be sure to test the applicator bottle with the specific sauce you are applying so the size of the opening of the tip can be adjusted if necessary before you go to set. Keep in mind that if the opening is too small or too large, the application of sauce might not give you the desired results. Always test the sauce and applicator bottle before going to set. Note that it may be necessary to strain larger chunks out of a sauce if they clog the tip of the applicator bottle. You will need to determine if another application method would be easier for the particular sauce. If the chunks are a desired element in the appearance of the sauce, and you want to use the applicator bottle method to apply the sauce, the chunks can be added to the sauce areas with tweezers after the sauce has been applied to the hem plate or food.

REMEMBER

Adding a garnish to your plate can be a complete game-changer. However, you must be careful and strategic when using them. Some cooks tend to overdo it with garnishes

Substitute for Thyme in a Recipe

A traditional herb in Mediterranean cuisines, where it is often paired with lemon, thyme brings a pungent aroma to various dishes, including meat and fish. The herb is part of the extended mint family and can be used fresh or dried, although fresh has a more pure flavor. If preparing a dish at home only to find there is no thyme in the pantry, do not panic. Because notes of mint, citrus and oregano are all evident in thyme, you still have plenty of replacements for thyme if you don't have on hand. Follow these helpful hints for a few suggestions that are easy

to swap in as a thyme substitute in any recipe.

Herb Mixes. A complementary herb to many other aromatic herbs, thyme brings a minty warmth to onion, garlic and ginger flavors, notes *Fine Cooking*, but doesn't dominate a dish in the way other herbs, such as rosemary or oregano, do. It is not surprising that this ability to highlight and balance other flavors makes thyme an essential ingredient of herbs de Provence, the Mediterranean dry herb mix that typically includes potent herbs from southern France, including marjoram and oregano. As a result, if a dish calls for thyme but you don't have any, herbs de Provence works as a catch-all replacement for thyme.

Poultry Dishes. The hint of citrus in thyme means that it works well in poultry and game dishes, particularly when used fresh. For slow-cooked dishes and stews, it is also one of the components of the bouquet garni, along with bay leaves and parsley, in its dry form. These types of dishes can greatly benefit from a bay leaf substitute if thyme is not an option.

For lamb dishes, rosemary steps in and is ideally bolstered by plenty of garlic. For turkey, a dry herb rub with sage, rosemary and salt results in a crisp, aromatic skin. A sage substitute wilts faster than thyme, but the highly aromatic ingredient is a delicious addition to white meats. Like thyme, rosemary, which is a sturdier herb, will hold up during longer cooking times.

Citrus Notes. Mediterranean and Middle Eastern cooking make ample use of thyme, especially lemon thyme, for seafood dishes. A whole fish poached in a thyme broth, for example, infuses the flesh with a citrus, herby aroma. To recreate the same effect, BBC Good Food recommends lemongrass, complemented by basil, rosemary and sage, for a baked salmon dish finished off with caramelized lemon. For an herb-crusted fish bake, lemony basil, parsley and chives give a bright, clean finish to white fish.

Savory Attributes. Instead of boiling broccoli into an underwhelming, slightly sulfurous dish, Mediterranean cooking incorporates it into a bright, herbal salad, tossed in a thyme and mustard dressing. If you don't have thyme, substitute oregano, rosemary and basil, with chili flakes an option to add zip. Thyme also excels at adding depth to a bean cassoulet, and a few sprigs tossed into a stew lend a rustic appeal. Celebrity chef Jamie Oliver picks rosemary and sage for his sausage cassoulet instead. The rosemary sprig evokes farmhouse cooking while the sage brings a delicate, savory flavor.



ROLE

PAUL BOCUSE: A FRENCH CHEF BASED IN LYON WHO WAS KNOWN FOR THE HIGH QUALITY OF HIS RESTAURANTS AND HIS INNOVATIVE APPROACHES TO CUISINE.

French chef born on February 11, 1926 in Collonges-au-Mont-d'Or, town near Saône (Lyon). It belongs to an existing series of cooks since the 17TH century. Its restaurant, located in the same village where he/she was born, offers a cuisine that has earned him worldwide fame.

This restaurant is frequented by a loyal Lyons clientele composed of men of politics, actors, musicians and singers famous, not to mention numerous foreign customers that, out of curiosity or pleasure, arriving from Paris.

Paul Bocuse has traveled all over the world, and has developed a gastronomic philosophy characterized by renewal and respect for the own origins. His training has been long. He/She was apprentice in Lyon, at the restaurant of Claude Maret, the Soierie, in 1942; He/She learned to make the purchase on the market and to choose more fresh raw materials. At that stage, it was common to go to market black to purchase live cattle and thus be sure of its freshness.

He enlisted in the French first division, BM 24, in 1944, and it was machine-gunned in Alsace; He/She recovered in a hospital in the United States. After participating in the parade of victory in Paris on June 18, 1945, he/she returned to his native region and continued with his training as a chef. In the Mère Brazier in the Luere, he/she looked after the garden, milked the cows, did wash, laundering, and cooking. Its owner was a former pupil of the great Fernand Point, which sent him to Vienna to improve with treatment and protocol standards.

Soon he/she took Paul Bocuse split his training, and in 1961 examination joined the Meilleur Ouvrier de France and won the first Michelin star. After the works that promoted in the albergue-merendero of his father, accomplished a year later the

second Michelin star. In 1965, with the third star, came the definitive consecration, the crowning of the great work they had done up to then. In a paradoxical way, in this moment of greatest prestige, he/she had to return to buy the name of Bocuse, because his paternal grandfather had sold it in 1921 and its establishment could not take it. The hostel in Collonges was renamed as Paul Bocuse. From now on, is consecrated to the internationalization of French cuisine and to the formation of other chefs as Alain Chapel, René Lasserre, Pierre Laporte, Gaston Lenôtre, Roger Verger, Jean Troisgros, Pierre Troisgros, Charles Barrier, Louis Outhier, Raymond Oliver, Paul Haeberlien and Michel Guerard.

Bocuse received the Legion of honour in 1975, at the Élysée Palace, from the hands of the President of the Republic, Valéry Giscard d'Estaing; on such occasion, he/she created truffle soup.

In 1979 devised a grocery line fine products and kitchen tools. In addition, he/she bought a vineyard in Beaujolais and became collector owner. After expanding its operations to the United States and Japan, and equipped with a great instinct for business, it sent its products to department stores, fairs, theme parks and pavilions, took part in television programs and edited books. Bocuse is the first chef whose art has been part of the gastronomic globalization. In 1987, he/she created the first global competition of cuisine, the Golden Bocuse; all the winning chefs receive substantial awards and a memory made by César, friend of Paul Bocuse. The same year received the title of officer of the Legion of honour from the hands of the then Mayor of Paris, Jacques Chirac, and the President François Mitterrand came to eat at his restaurant in Collonges; was that the first time that this happened.

Despite his numerous occupations, Bocuse never forgets his restaurant in Collonges; a team of 60 people led by his wife Raymonde ensure his reputation throughout the year. Elected in 1989 as Cuisinier du siècle ('Chef of the century') by Gault and Millau, the following year was you entrusted the Presidency of the school of the culinary arts from Écully and Euro-Toques Association. From 1992 deals with the Presidency of the Meilleurs Ouvriers de France, Cuisine-Restaurant and opened the Galerie des Chefs in 1993, a fresco that covers the walls of Collonges restaurant where there is hanging a variety of portraits of those who have worked for the development and evolution of the kitchen.

After working at the opening in Lyon of three brasseries, to the North, South and East of the city, he/she worked with G. Blanc and M. Veyrat, prominent chefs in the same city, as official Cook of the international G7 Summit which brought together the countries most industrialized. In 1998 he/she made restoration works at his restaurant.

All the Bocuse brasseries, as well as its restaurant, menus are prepared according to the station. The letter stated that to guarantee the irreproachable freshness of some

dishes you cannot serve you. The structure of the Charter is very similar at all, with a series of common dishes, such as the specialty of each restaurant, fish market, menu for children, the suggestions of the station, pasta, desserts, and each day of the week, entries, express formulas, a special dish. The menu includes also a wide range of drinks and a fine selection of wines. The specialities of each establishment are intended to be eternal; in the North highlights the tartare and the so-called Canailles dishes. In the letter from the South, combining the flavours of the Mediterranean from Italy to Spain, through Provence and the Maghreb, call kitchen Sun, you can find up to pizzas. The East has as specialities the hot soufflés and dish of the day “cuisine travel”.

In addition to France, Paul Bocuse has restaurants in the United States, Japan, and Australia.

SUMMARY

- Food garniture forms an integral part in food presentation in gourmet cookery. It is an art that has been practised for years in many food establishments.
- Garnishes can take many forms depending on the food they are decorating. Herbs, berries, chopped fruit, sauces or vegetable bits are possible garnishes for foods.
- Garnishes can fill in the empty spaces on a plate, giving the illusion of an abundant dish. This trick is used to surround the serving plates on buffet tables or at salad bars by surrounding the dishes with garnishes of parsley or ice sculptures.
- Garnishes should be edible and should be an integral part of the food so that they will not be left on the plate. Not all food requires garnishing.
- Dishes need to be balanced, and herbs and other garnishes enhance dishes by increasing complexity through an added dimension of flavor.
- Cornflowers are a bright purple, fringy looking flower. Purple is the most commonly found, but pink and white varieties are also edible.

MULTIPLE CHOICE QUESTIONS

1. **Why should you avoid using beetroot as a garnish?**
 - a. It is not a natural food color.
 - b. The color runs.
 - c. It is too expensive to use as a garnish.
 - d. It is too large to use as a garnish.
2. **Which of the following fruits can be used to garnish all of these three meats: ham, turkey and duck?**
 - a. Peaches and pears
 - b. Bananas and passion fruit
 - c. Grapefruit and watermelon
 - d. Mango and plums
3. **The filet is topped with deep-fried leek rings that were lightly breaded with a tempura batter.**
 - a. True
 - b. False
4. **Fresh fruit used for either eating or decoration must be discarded if they have been on the buffet for 4 hours or longer.**
 - a. True
 - b. False
5. **The danger zone and time limits commence when the food is placed on the buffet line.**
 - a. True
 - b. False
6. **Tiny cubed cuts of uncooked, unseasoned vegetables; often used as a garnish.**
 - a. dauphanoise
 - b. brunoise
 - c. tourne
 - d. dice

7. One of the important elements in plating and presenting a food dish; ingredients should be cut neatly and uniformly.
- napping
 - framing
 - texture
 - shape

REVIEW QUESTIONS

1. Give an overview on garnishing techniques.
2. Explain the several types of garnishes for food.
3. How to prepare good garnishes strategy for food?
4. How to choose popular food items with their accompaniments?
5. What are the usage of dandelion in garnishing?

Answer to Multiple Choice Questions

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (b) | 2. (a) | 3. (a) | 4. (b) | 5. (b) |
| 6. (b) | 7. (a) | | | |

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CHAPTER 6

SALAD AND DESSERT PREPARATION

INTRODUCTION

Salad is a combination of various ingredients that is either raw ,cooked or both. The ingredients used can be any vegetable, meat, fish, fruits as a main ingredient or in combination depending on its type like simple salad, compound salad,tossed salad. You are working in a restaurant and a guest orders a Simple Salad. What will you serve the guest?

Let us understand what a Simple Salad is.

A Simple Salad usually consists of a single kind of vegetable, fruit, meat etc. tossed in a dressing as a base with one or two ingredients, in small quantities are used for decoration or as a garnish. For example, Cucumber salad, coleslaw salad, tomato salad ,green salad, waldrof salad, Russian salad , Caesar salad etc.

A salad is a food served with a dressing that can be a cold dish or green vegetables or a mix of fruits or frozen mixture of food or chopped food. In India and

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Define the selection of salad ingredients
2. Learn about the fruit salad preparation
3. Explain basic concept of desserts

Nepal it is generally prepared as mixture of certain fresh raw vegetables. Salads are prepared from raw or cooked vegetable, meats, fish, seafood, egg, poultry, cheese, pasta, fruits etc. Salad can be served as a first course in a small quantity. It can also be served as a salad course or as an accompaniment with the main dish or roast course. Salad should be chilled, crisp, piquant, and colorful.

Food historians tell us salads (generally defined as mixed greens with dressing) were enjoyed by ancient Romans and Greeks. As time progressed, salads became more complicated. Recipes varied according to place and time. Dinner salads, as we know them today, were popular with Renaissance folks. Composed salads assembled with layers of ingredients were enjoyed in the 18th century. They were called Salmagundi. Today they are called chef's salad.

Finding inspiration and developing a great plated dessert is a chore in itself. But having to plan an entire dessert menu, to strike a balance of items to be offered, to choose items that will be attractive to your customers and promote good sales takes planning.

Establishments that have the most success with their dessert menu (and sales) tend to stick to the most popular flavours. Innovation just for innovation's sake is generally not a good idea. Non-traditional ingredient pairings may work, for example, and chocolate always sells well—but if it is combined with something like beets, it will turn most people off. There is a time and place for uncommon dessert ingredients: special events, tasting menus, catering events. Desserts are a comfort food to most people, and to have an approachable menu with popular flavours will lead to the highest customer satisfaction.

SELECTION OF SALAD INGREDIENTS

In order for you to make the perfect salad you need to know something about the kinds of ingredients that you can use. A large number of salads will be made using a combination of different ingredients that not only complement one and other but provide different tastes and textures as well. Below we take a look at the various different types of salad ingredients that are used the world over to make a very simple and basic but very nutritious salad.

- *Lettuce & Green Leaved Plants:* Often the most common variety of lettuce that people use to make a salad quickly is the iceberg variety. But there are plenty of others you may want to try which will add a completely different taste and texture to your salad. For instance why not try a butter head lettuce which is very tender tasting one or the cos lettuce whose leaves are much coarser in texture.
- *Fruit & Vegetables:* Instead of sticking with the more traditional fruits and

vegetables in your salads why not try to be a little more adventurous. Apples are certainly ideal and can easily combine with a number of different other salad ingredients also.

- *Meat and Fish:* Although most people commonly think that a good salad should solely consist of just vegetables this is not the case. In fact, some of the world's best-known salads such as Caesar's have chicken, meat or fish in them. But it is best that you do not go overboard on the amount of meat or fish you include.

But when it comes to you finding the right kinds of salad ingredients for your salad recipes it is important that you use the freshest ones possible. When shopping for your ingredients avoid those which are marked or bruised or those where the leaves have begun to wilt. Also before you begin preparing the salad make sure that each ingredient has been thoroughly washed to remove any unwanted **toxins** or chemicals from them. Even salad ingredients which have been packaged and are ready to use should be washed.

Keyword

Toxin is a poisonous substance produced within living cells or organisms; synthetic toxicants created by artificial processes are thus excluded.

Shopping and Handling Techniques for Produce

Whether you are making a salad with greens or fruit, quality and freshness are essential. If you have worked

With a food stylist on a photo shoot that involves produce, you are already aware of the careful shopping that took place before the stylist arrived. As the stylist unpacks the contents from grocery boxes and bags, you are immediately aware that the beautiful, blemish-free produce is treated like royalty: It's pampered and carefully tended and nurtured.

For you to achieve success with your project, you will need to adopt a stylist's care with selection and treatment of produce.

Handle everything gently, avoiding hard contact with anything, especially the plastic or metal grid of a shopping cart or basket. Avoid stuffing tender items into plastic bags. And when you use plastic bags, place only a small number of items in each bag. Tell grocery checkers, before they start ringing up your selections that you are purchasing items for a photo shoot and you would appreciate their care in handling the items. You

need to supervise the bagging process or, better yet, do it yourself to make sure all items are safe. Use separate boxes or paper bags for all greens, tender fruit in one layer in boxes, etc. Once you select produce from a store's display, it is up to you to be its guardian and protector.

What are salad greens?

Salad greens are leafy greens which are used to make salads. Lettuce is a common and well known example of a salad green, but other greens ranging from arugula to mustard greens can appear in salads. Many cultures have a long history of the cultivation and collection of greens for use in salads, since leafy greens are beneficial to human health and digestion. Some people also greatly enjoy their flavor, especially when paired with other ingredients.

Some other examples of salad greens include rocket, cress, endive, chicory, lamb's lettuce, fries, escarole, dandelion greens, mustard, sorrel, miner's lettuce, tat soi, taratezak, trefoil, pursuance, spinach, chard, kale, and fresh herbs like thyme, rosemary, oregano, sage, chives, cilantro, and parsley. Greens can vary in flavor from mild to zesty, and they are often crunchy and crisp. Dark leafy greens like spinach and kale provide a great deal of nutrition, while more mild lettuces such as iceberg have minimal nutritional value, but a pleasing crunch which can add contrast and dimension to a salad.

Many greens have traditionally been collected in the wild; humans have been experimenting with edible greens for thousands of years. In some regions, the seasonal appearance of favorite greens is a cause for celebration, with a number of traditional dishes featuring special seasonal greens. Other greens are cultivated commercially and sold in markets and greengrocers all over the world.

Many markets offer salad mixes which feature an assortment of greens. A salad mix is a convenient way to purchase greens since it blends textures and flavors in a neat package, rather than forcing the cook to purchase multiple whole greens which may go bad before they are used. Salad mixes are also sometimes packaged with dressings and other salad ingredients like croutons, bacon bits, tomatoes, carrots, peppers, olives, cheese, and numerous other things.



Some people also like to grow salad greens at home in a small patch which can be harvested as needed. Many greens take well to container gardening, so they can be grown on a porch, roof, or stoop in an area with limited space. Even a window box could be used to support a small collection of greens, and in some areas greens can be encouraged to grow year round so that they are always available.



When purchasing salad greens in the store, look for crisp specimens without any signs of discoloration, slime, or wilting. Always wash salad greens before using them to remove residual materials, and try to use them within a day or two for maximum flavor and freshness.

Keep Salad Greens and Fresh

Salad greens will perk up, refresh, and stay fresh appearing longer if they have a quick bath in cold tap water with Fruit Fresh Produce Protector mixed into the water according to directions on the packaging. Shortly before beginning the salad build, place small bunches of greens into a large bowl or a clean sink filled with cold tap water and the produce protector. This process requires using small batches of greens

so they are not crowded or mashed into the water. Gently swirl the greens in the water for a few seconds. Using your hands, with fingers slightly apart, let the majority of water drain from the greens before placing them into a salad spinner.



Wash and dry the ingredients. Rinse the lettuce and other vegetables in cool water and dry them off. The ingredients of your salad must be completely dry before you put the salad together.

Keyword

Salad spinner is a kitchen tool used to wash and remove excess water from salad greens. It uses centrifugal force to separate the water from the leaves, enabling salad dressing to stick to the leaves without dilution.

- Most vegetables, like tomatoes and cucumbers can be rinsed under running water and dried with clean paper towels. Some, like carrots, may need to be scrubbed with a vegetable brush or peeled with a vegetable peeler to remove any dirt caked into the outer crevices of the skin.
- The hardest vegetables to work with in this case will be your lettuce and other leafy greens. To thoroughly clean and dry leafy greens, you should separate the leaves and let them sit in a sink or bowl of cool water for five to ten minutes. After that, you should rinse the leaves gently under running water and place them into a **salad spinner**. Spin the leaves thoroughly to remove all traces of moisture.
- It is absolutely crucial that you send the lettuce through a salad spinner and that you dry off all the other vegetables. When trying to keep the lettuce portion of the salad fresh, you need the container it sits in to be as dry as possible. If moisture builds up inside the container, it will cling to the lettuce leaves and cause them to become soggy.



Assemble the salad. You can mix the lettuce and other ingredients as desired before you store the salad. Combine the ingredients in a single large bowl or in individual serving bowls.

Note: that there are some ingredients that you should only add when you are ready to serve the salad. Hard boiled eggs can spoil fast and should not be stored with the rest of the salad. Most fruits have too much water content and can cause the lettuce to wilt too quickly even if you take precautions against moisture.

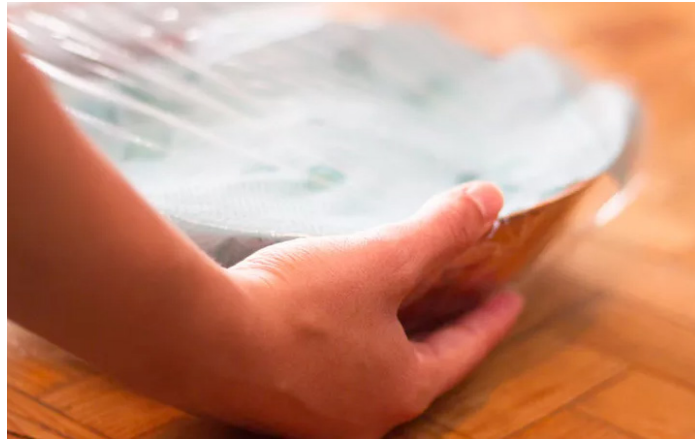


Place a paper towel in the bowl. Take a clean, dry paper towel and fold it so that it can rest at the top of the salad bowl. If you have a large bowl of salad, you might need to use two or three paper towels.

- The paper towels are another crucial element because they help keep moisture off the lettuce. Vegetables naturally contain a little water, so even if you dry everything off thoroughly before you place it into the bowl, some moisture will inevitably build up. By placing paper towels on top of the salad, you can protect the lettuce from getting soggy. The water will be absorbed by the paper towels instead of sitting on the lettuce leaves.

Kitchen Essentials and Basic Food Preparation

- If your salad contains a lot of vegetables with high water content, like tomatoes and cucumbers, you might want to consider adding more protection by layering paper towels in between layers of salad. Lay a little of your salad on the bottom of the bowl and place a paper towel over it. Spread out more salad on top of that and lay another sheet of paper towel over that. You can repeat this for two to four sets of alternating layers, but make sure that a paper towel rests on top.



Seal the container. If the container has a lid, place the lid on top. Otherwise, tightly cover the container with plastic wrap.

- If you want to ensure freshness, cover the bowl with a tight sheet of plastic wrap and place a tight lid on top of that.
- Like moisture, air is another element that can quickly cause your lettuce to wilt. It can also cause the other vegetables to become less fresh and to spoil faster, so keeping air out of your container is an essential step.



Store the dressing separately. Any dressing you plan to use for the salad should be stored in a separate airtight container. Do not combine the dressing and the salad before you store the salad.

- If you add the dressing beforehand, you will introduce too much moisture to the salad and pretty much guarantee that the lettuce will become soggy and wilted.



Refrigerate the salad. Place the container of salad and the container of dressing in the refrigerator. Keep the salad there until you are ready to serve it.

- Every time you open the container, you should stir the salad some and replace the paper towel with a fresh one.
- You should also replace the paper towel if it begins to look soggy.
- When stored in this manner, salad can stay fresh and crisp for a week or more.

Salad Cream

Salad cream is a condiment developed by the Heinz Company in 1914 and sold predominantly in the United Kingdom, although it has become popular in some regions of the world with a large expatriate British population. For people unfamiliar with it, this condiment is probably most similar to mayonnaise in terms of composition and texture, although salad cream is slightly yellowish, rather than white, and its flavor is a bit more complex.

The basic ingredients of salad cream include: egg yolks, mustard, vinegar, vegetable oil, and sugar. Many versions are also lightly seasoned, coming in a variety of flavors to cater to various palates. Depending on the brand and the style, this condiment

may be lower in fat than traditional mayonnaise, or roughly equivalent, and it can be spicy to sweet.

As the name of this condiment would suggest, it was originally developed for use on salads, either as a standalone dressing or as an ingredient in sauces and dressings. However, its uses have since widely expanded, and the condiment is now used as a sauce for a wide variety of things, including pizza, sandwiches, and various fried foods. Salad cream is slightly tangy, thanks to the vinegar, with a full mouth feel and a hint of a kick from the mustard.

REMEMBER

The popularity of salad cream has waxed and waned. At some periods in history, it was viewed primarily as a condiment for the lower classes, and an alternative to mayonnaise, which tended to be more expensive.

Middle and upper class families at one time avoided it because they did not want to be perceived as members of a lower class, but this is no longer the case today, although salad cream sometimes pops up in parodies of lower class life in the British media.

In the United Kingdom, this condiment is generally very easy to obtain, coming in a variety of packages and flavors for various needs. Outside of this region, it is sometimes available from large markets, especially if they carry British products, and it can also be ordered through exporters that ship British delicacies overseas. Some consumers desperate for salad cream may enlist the services of traveling friends or acquaintances living overseas to import small shipments for personal use.

What Is Salad Olivier?

Salad Olivier, also called Russian salad, is a dish that was created in the late 19th century in Russia. The original version included a long list of ingredients, many of which are not commonly available, including grouse, aspic and caviar. These ingredients were mixed together with a special mayonnaise, the recipe for which was never fully revealed by the salad's creator. A version of the salad became extremely popular in Russian homes, especially as a dish to be served during holidays and other celebrations. The Salad Olivier that became a staple food in the regions in and around Russia uses more readily available ingredients, such as pickles and bologna, and more closely resembles a potato salad than the original creation.



The basic Salad Olivier that is served during New Year's celebrations in Russia begins with boiled potatoes that have been cubed. These are mixed together in a bowl with — most commonly — peas, carrots and cucumbers or pickles. Other vegetables can be added to the salad, including tomatoes, peppers, onions and celery. Hard-boiled eggs are finely diced and added to the bowl, as well. The exact proportions and mixture of vegetables is different from one recipe to the next.

Nearly all the recipes for Salad Olivier call for some type of meat to be added. Unlike the authentic version, the derivative versions tend only to include one type of meat throughout the entire salad instead of small bits of different types. In Russia, the meat that is added is usually a very fine-grained sausage that resembles bologna. Some salads use chicken or shrimp, or they may include duck, country sausages or beef cut into small pieces. The meat does not have to be diced and mixed with the vegetables but can instead be served as a whole piece alongside the salad, if desired.

Whatever is included in Salad Olivier, one constant in the recipes is that the dressing is based on mayonnaise. A simple recipe might just use a few scoops of mayonnaise as the whole dressing, while other recipes might call for a dressing made from mayonnaise, mustard, spices and lemon juice.

Once everything has been tossed with the mayonnaise dressing, Salad Olivier is completed. It can be served in a dish or spread on top of wedges of toast as an appetizer. The salad also can be used as a sandwich spread or as a filling for other foods, such as baked potatoes.

FRUIT SALAD PREPARATION

Fruit salad is a dish comprised primarily of fruit and typically served as a dessert, although some may be offered as appetizers. There are a number of different styles, ranging from simple blends of mixed fruit to complex constructions enshrined in gelatin. Some markets and delis carry packaged salads for people to purchase, and this dish can also be made at home with ease.



In other instances, a salad may be prepared with a simple acidic dressing that is designed to keep the fruit from browning. Lime juice, *for example*, may be used on

Kitchen Essentials and Basic Food Preparation

a tropical salad, or saba may be mixed in with a Mediterranean fruits. Vinaigrettes may also be used, or the fruit may simply be dipped in acidulated water to prevent browning. Other fruit salads are made with cream dressings, ranging from tangy dressings with blue cheese or sour cream to sweet dressings with whipped cream or mascarpone cheese.

The nutritional value of fruit salad varies widely, depending on the fruits and dressings used. Many fruits are high in fiber and an assortment of vitamins, especially if their peels are left on, as in the case of apples, grapes, kumquats, and other fruits with edible rinds or peels. The dish typically tastes best when fresh fruit is used, although it can be refrigerated for up to a day, and if tossed with an acidic dressing, the risk of bacterial contamination is typically fairly low.



Prepare your fruits. Wash, dry, and cut the fruit for your salad. Many types of fruit are difficult to keep fresh once cut, but there are methods you can use to help prolong freshness. Consider whether you want to prepare these fruits in advance using these techniques or if you want to add these fruits to the salad just before serving it.



Coat cut fruits in an antioxidant fruit juice. If you are using fruits in your salad that are likely to brown when exposed to air, you should protect them by tossing the cut pieces in a little lemon juice.

- Apples, pears, and bananas oxidize when the flesh of the fruit is exposed to air. This oxidation process is what causes these fruits to quickly turn brown after you cut them.
- While lemon juice is the most common juice used to protect sensitive fruits from oxidation, most citrus juices would work. That includes lime juice, pineapple juice, and orange juice.



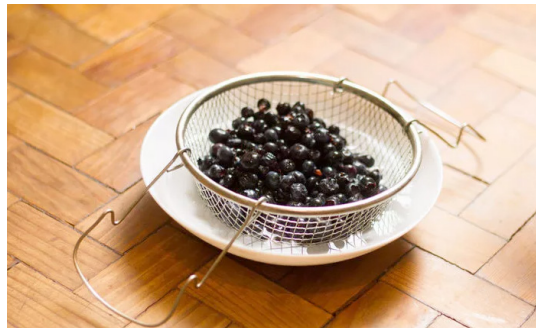
Submerge the fruit in cold water. Another way to preserve the freshness of cut fruit for a longer period of time is to place the fruit pieces into a plastic container and cover them with fresh, cold water. Cover the container with a lid.

- The water needs to be as cold as you can get it to be without adding ice.
- You also need to fill the container to the brim with water. The pieces of fruit should be completely submerged and should not be able to come into contact with any air.
- You can store the fruit separately in this manner or you can mix the salad and keep the entire thing, minus the dressing, submerged in water.
- Note that this is only necessary if you have fruit that will oxidize, like apples or pears. It is not necessary if your fruit salad only consists of citrus fruits or whole berries.



Refrigerate the fruit salad. Place the container of fruit salad in the refrigerator and chill until you are ready to serve it.

- Many types of fruit need to be refrigerated in order to stay fresh, including most berries. All cut fruit should also be stored in the refrigerator. As such, virtually any prepared fruit salad will need to be chilled, even if there are no fruits in it that can oxidize.
- Even in the refrigerator, you should only store fruit salad for three to five days at maximum. Even if you can preserve it past that point, much of the fruit will lose a good portion of its freshness.



Keyword

Fruit salad is a dish consisting of various kinds of fruit, sometimes served in a liquid, either their own juices or a syrup.

Drain the water when ready to serve. Immediately before you intend to serve the **fruit salad**, take it out of the refrigerator and drain the water from it. Drain as much of the water away as possible.

- You could also scoop the fruit out of the container with a slotted spoon.



Save the dressing until the end. Do not refrigerate the fruit salad with the dressing mixed in. Instead, prepare the dressing

just before you plan to serve the fruit salad and toss the prepared fruit into it before dishing it out.

Techniques for Fruit Preparation

They are gently placed on trays lined with paper towels until needed. Strawberries get a quick bath in a large bowl of cool water and Fruit Fresh Produce Protector then placed on trays lined with paper towels. Because most of your fruit ingredients will have been purchased on the day of the shoot, most fruits will be fine if left at room temperature. Lay them out on trays or on a tabletop so the fruits are not touching. If you had to shop the day before photography, you will need to ensure that the overnight temperature in your studio is between 60 and 65 degrees. Lay an inverted bowl, baking pan, or cardboard box over the fruit to protect it from drafts and insects. Make sure the item covering the fruit doesn't touch the fruit. It's also a good idea to put a note on bowls and boxes covering fruit, informing studio personal that hero fruit is being protected and to keep their hands off!

The cutting of fruits must be performed immediately before final photography. Make sure your knives and peelers are sharp. Before you start to cut fruit, mix 4 to 6 cups of cool water and the recommended amount of Fruit Fresh Produce Protector in a bowl.



When you start peeling and cutting the fruit, you will want to work safely but quickly. First remove any unwanted peel from the fruit. Give the peeled fruit a quick dip in the water bath. Then cut the fruit into desired shapes and immediately immerse the pieces in the water bath again. Lay the individual cut pieces on a plastic tray and lightly cover the tray with plastic wrap. This method will give you quick visuals of all the fruit when building the hero salad. When all the fruits for your salad are cut, start to build the hero fruit salad.



Dressing a Fruit Salad

To choose the best salad dressing for your salads, you will want to consider the two most important factors: taste and health. Though salad dressing is largely a personal preference, some types and flavors of salad dressings pair better with certain types of salads. For instance, in a salad made up of delicate leafy greens, you will want a lighter dressing that doesn't overwhelm the leaves. Health is also a big concern with dressing; though the creamy dressings can be delicious, they are also typically loaded with saturated fat, and can undo some of the health benefits of eating a healthy salad in the first place.



Matching the tastes of your salad dressing to the tastes in your salad for the best possible combination is a good way to ensure that your salad is a delicious meal or side dish. First, consider the type of lettuce used in the salad; delicate mixes often work better with lighter, vinaigrette dressings whereas salads with denser, crunchier leaves can stand up better to heavier, creamy dressings. If the salad is sweeter and contains fruits, it often pairs well with a tangy dressing, such as a balsamic vinegar dressing. If the salad has a more peppery taste, pairing it with a sweeter dressing, such as a ginger dressing, can complement it well. The same holds true for pasta

salad; though creamy pasta salads are perhaps the most common, some people prefer making vinegar-based pasta salad.

Health concerns are a large reason why you might choose one salad dressing over the other. Creamy salad dressings are typically made with mayonnaise and are very high in saturated fat, making an otherwise healthy salad not only calorie-dense but also pretty bad for the heart as well. This is why choosing oil and vinegar dressing is often a better choice.



Experts typically recommend going with a low-fat salad dressing rather than a fat-free salad dressing, however. This is because some fats the “healthy” unsaturated fats found in things like olive oil actually help the body to absorb nutrients from vegetables better, and increase feelings of fullness. This can help to make salads more filling and ultimately more nutritious. Another good idea is to look for salad dressing with only a few simple ingredients, rather than a long list of preservatives and other unnecessary additions. If all else fails, it is very easy to make your own salad dressing, thereby giving you complete control over what goes into it.

BASIC CONCEPT OF DESSERTS

The majority of desserts are sweet, served towards the end of a meal and are often the highlight. A dessert or pudding should contrast with earlier courses and should also complement the meal. A dessert plays an important role in determining the customer’s overall impression of the meal.

“Used for numerous dishes, sweet or savory, hot or cold. Dessert puddings usually refer to starch thickened, baked, steamed or boiled puddings, *for example* sago puddings, baked chocolate or cabinet puddings, and steamed Christmas puddings”.

There are a lot of different kind of dessert which some of them can be made at home easily, but some of them is hard to make and your only choice is come to the cake store.

There are a lot of different dessert and recipe you can find on the internet or in the cooking book, each housewife can change a little bit of the recipe to suit with the family taste and help the dessert become special. Some of the famous dessert you have to know such as apple pie, pudding, pancakes, France is popular with crepes, maccaroon.

There is nothing can better than a cup of cold dessert in the hot summer, after a sport game or after a day out. There are various type of cold dessert which is familiar with all people, such as pannacotta (come from Italia), cheese cake, cold yogurt, galette, tart, etc. and we cannot forget iced-cream as well. The special thing about summer desserts is that its taste, most of the dessert is about the sweet taste with the highlight of fresh fruits.

Ingredients

REMEMBER

Sugars contribute moisture and tenderness to baked goods. Flour or starch components serves as a protein and gives the dessert structure. Fats contribute moisture and can enable the development of flaky layers in pastries and pie crusts.

Sweet desserts usually contain cane sugar, palm sugar, honey or some type of syrup such as molasses, maple syrup, treacle, or corn syrup. Other common ingredients in western-style desserts are flour or other starches, fats such as butter or lard, dairy, eggs, salt, acidic ingredients such as lemon juice, and spices and other flavoring agents such as chocolate, peanut butter, fruits, and nuts. The proportions of these ingredients, along with the preparation methods, play a major part in the consistency, texture, and flavor of the end product.

The dairy products in baked goods keep the desserts moist. Many desserts also contain eggs, in order to form custard or to aid in the rising and thickening of a cake-like substance. Egg yolks specifically contribute to the richness of desserts. Egg whites can act as a leavening agent or provide structure. Desserts can contain many spices and extracts to add a variety of flavors. Salt and acids are added to desserts to balance sweet flavors and create a contrast in flavors.

Some desserts are made with coffee, such as tiramisu, or a coffee-flavored version of a dessert can be made, *for example* an iced coffee soufflé or coffee biscuits. Alcohol can also be used as an ingredient, to make alcoholic desserts.

Dessert Salad

Dessert salad is a sweet dessert often made with fruit. Despite the name, this dish does not contain vegetables or lettuce. It is a popular dessert for summery meals or outdoor parties because it tends to be lighter and very refreshing because it is chilled. In many cases, dessert salad is made with a mixture of fruits, as well as additional items to make it sweeter and hold the salad together such as gelatin or whipped cream. Ambrosia, *for example*, is a popular dessert of this type, often made with heavy cream, fresh fruits, and other ingredients such as pistachios.

The ease of making dessert salad makes it a popular dish for potlucks, picnics, or other large family or community meals. It is fairly easy to invent a recipe, or there are dozens to be found online. Many people find that preparing the dish with canned fruits is slightly easier, though it is certainly possible to use fresh fruits as well. Canned peaches, mandarin oranges, and even maraschino cherries are some of the most popular fruit options for dessert salad; pineapples and pears are also good options because many people like them. For people who prefer to use fresh fruits, mixes of summer berries such as strawberries, raspberries, and blueberries can be delicious.

Of course, some additions are necessary to make the dish a true dessert salad rather than a simple fruit salad. For this reason, whipped cream, heavy cream, or gelatin are some of the most popular options because they give the dish more weight, and help to make it a more filling dessert. Some people might also add sugar or sour cream. Nuts such as pistachios are sometimes added as well. Others will even add things such as soft candy, pudding, or sweetened rice, depending on the other ingredients in the salad.

Generally, a dessert salad will need to be made at least a few hours in advance and then chilled in a mold to give it time to set. It should then be kept cold when it is served. If it will be consumed by a number of different people, it is important to indicate the ingredients in the salad particularly if it contains nuts in case anyone has allergies. A dessert salad is an excellent option that is enjoyed by many different types of people, and represents something a little different than the more traditional cookies, cakes, and pies often found at events.

Techniques of Plated Desserts

Plated desserts are more common in restaurants, resorts, and dessert cafes than they are in the home. However, many of the theories, thought processes, techniques, and strategies that are used to develop a successful plated dessert can apply to just about any dessert.

The Four Components of a Plated Dessert

Plated dessert presentations (or simply plated desserts) are desserts that are served by an establishment (such as restaurant, resort, or dessert café) after it is ordered by a guest and enjoyed on site. Most home bakers do not make plated desserts because of the time and dedication it can take. As a home baker you would have to make the sauce and the other components when all you really want to do is eat your cake. Plated desserts are not meant to be taken home. True you can put all of the components together in a to-go box but there is still something missing. Whether it be the actual expression and build of the components (as opposed to being all thrown together in a Styrofoam box) or even something as simple as it needs to be served on a certain plate affects the chef's true expression of the plated dessert.



It is widely accepted that there are four components of a plated dessert: The main item, the dessert sauces, the crunch component, and the garnish. A plated dessert should have all of these items, but if it lacks any one of these items (except for the main item) it can still be a plated dessert. It is also widely believed that all of the components should be edible, and many chefs also believe that each component should be eaten. That second point is widely debated because many chefs like to create sugar decorations and structures for presentations which are technically edible but are never actually eaten.

The Main Item

The main item of a plated dessert is the actual dessert itself. The main item as a finished product should weigh between three and five ounces but it is not unusual for it to weigh as much as 8 ounces. The main item should never be so large that

is overwhelming. If served in a restaurant *for example* it should be a nice sweet ending. However, if served in a dessert café it is expected to be on the larger side, since that will be the only meal a guest will have there.



The main item should be the main focal point of the dessert presentation. This reassures the guest's choice and prevents the customer from being distracted from all the other components of the plated dessert. In other words, the slice of cake (or whatever the dessert is) is the most important part of the dessert and should not be over whelmed or lost among the other components. The main item should have taken longer to prepare than any other component in the presentation. It should also be the main source of flavor for the presentation while the other components contrast and complement it.

The other components should be used with just as much care as the main item. They should be purposeful and well thought out. An intelligent customer can easily figure out which parts are necessary and which were just used as fillers and could be offended at the **professionalism** and integrity the venue lacks. In other words, do not just throw caramel sauce or a cookie into the dessert because a plated dessert should have a sauce and a crunch component. The other components have a purpose and should be used in that manner. They should also be visually appealing and help guide the guest's eyes to the main item, though flavor is always the most important role of any of the components.

Keyword

Professionalism is perhaps the most misunderstood and over described term in modern times. Therefore, it is difficult to explain the precise expectation clearly.

The Sauce

A plated dessert should have up to two sauces but if tastefully approached more can be used. Overall the sauces should not weigh more than one to two ounces with the exception of a flooded design. Sauce is very important for dry items like pies and cakes but a sauce can add to any dessert. If you have read the section on common dessert sauces then you know sauce is a complicated category in itself. Since there are so many different kinds of sauces the combination of flavors, colors, and textures is almost endless but as emphasized before each of these should be expressed tastefully and they should make sense to the dessert. If you are serving a flan, a kiwi puree may not be a good way to go even if it does add color to the dessert. If you are serving a sticky gooey dessert, a rich caramel sauce may not be a good direction a smooth sauce may help balance out the stickiness.



The sauces used should be about the same consistency. This is so the sauces do not run into each other. This effect is called bleeding. The sauces should be able to sit next to each, and even inside one another, and hold their own shape. This allows for dessert sauces to be manipulated like paint and create fun designs.

Some dessert presentations may lack a sauce depending on what vessel it is served in, though these desserts should be very moist in nature. Some have the sauce poured right on top as in the case of an ice cream sundae *for example*. Some desserts even make their own sauce such as flan.

Crunch Component

A crunch component is exactly how it sounds. It is an added component that adds a crunch to the dessert. This is especially important to soft desserts like custard and

ice cream. It is most commonly used when the main item lacks flour though it can be used to enhance any dish whether it has flour or not. The main idea behind a crunch component is to add contrasting texture to a dessert. Consider being in room with flowers. Eventually you stop smelling the flowers because your nose gets used to the smell. The same feeling can happen with a dessert which is why contrasting components are just as important as complimentary ones. A nice crunch here and there awakens the mouth so the dessert can be enjoyed at its max from first bite to last bite.



Crunch components are usually a dry decorative cookie, such as a tuille or biscotti, but anything can be used such as nougat. Tuille is a very popular crunch component because it is easy to make, its flavor is easy altered, and it can be shaped into various shapes even three dimensional shapes. When it comes out of the oven and is still hot it is pliable and can be molded into a variety of shapes.

Garnish

The garnish is the final component of a plated dessert. This broad category can be just about anything. Common garnishes include fresh mint leaves, powdered sugar, chocolate piping, fruit, chocolate and sugar work, and sorbet. Since the garnish category is so broad in nature, it allows the chef to add to the depth and complexity of the dessert. However, a garnish should be used with restraint just as much as it should be used tastefully. A garnish that is over used loses its effect and can ruin a dessert. The most commonly over used garnish is the mint leaf. Yes it has a refreshing flavor and adds a bright green to desserts but anybody can use a mint leaf. A pastry chef should push his boundaries and use his creativity to find a garnish that works better than a mint leaf.



Varieties of Desserts

Dessert consists of variations of flavors, textures, and appearances. Desserts can be defined as a usually sweeter course that concludes a meal. This definition includes a range of courses ranging from fruits or dried nuts to multi-ingredient cakes and pies. Many cultures have different variations of dessert. In modern times the variations of desserts have usually been passed down or come from geographical regions. This is one cause for the variation of desserts. These are some major categories in which desserts can be placed.

Cakes

Cakes are not just for birthday parties. These desserts resemble tender, sweet breads. Examples of cakes include angel food cake made with egg whites, sponge cake, flourless cakes like the sacher torte, German chocolate cake, pavlova cake made with a meringue base, pound cake and fruitcake. Petits fours, cupcakes and snack cakes are single-serve sizes of larger cakes.

Cake decorating is one of the sugar arts that uses icing and other edible decorative elements to make otherwise plain cakes more visually interesting. Alternatively, cakes can be molded and sculpted to resemble three-dimensional persons, places and things.

Cakes are decorated to mark a special celebration (such as a birthday or wedding). They can also mark national or religious holidays, or be used to promote commercial enterprises. However, cakes may be baked and decorated for almost any social occasion.

Styles of cake decorating

Decorating a cake usually involves covering a cake with some form of icing and then using decorative sugars, candies, chocolate or icing decorations to embellish the cake. But it can also be as simple as sprinkling a fine coat of icing sugar or drizzling a glossy blanket of glaze over the top of a cake. Icing decorations can be made by either piping icing flowers and decorative borders or by molding gum paste, fondant, or marzipan flowers and figures.

Wedding Cake

Wedding cake styles have evolved over the years from the traditional white iced cake with icing flowers and a plastic groom and bride on top to highly artistic designs that mirror the tastes and style of the wedding couple.



“Cake in White Satin” is a beautiful example of why fondant is such a popular wedding cake choice.

Fancy Cake

A fancy cake decorating idea that can really make an impression is chocolate curls. They can give a cake an elegant look whether you are placing chocolate curls on a white frosted cake or white chocolate curls on a chocolate frosted cake. You can also mix them up for an even more interesting look.

DID YOU KNOW



The art of cake decorating dates back to mid-17th century in Europe and has since flourished in many regions and countries, including Northwestern Europe, North America, Australia, New Zealand and South America.

There are some steps for fancy cake, such as:

- To create chocolate curls, place 2 ounces of semi-sweet chocolate and 1 teaspoon of shortening in a small glass bowl. Place the bowl in a pan of hot (not boiling) water. Be sure no moisture gets into the chocolate because this would cause it to seize



- Allow the bowl of chocolate and shortening to stand in the hot water; stir occasionally. When they are almost all melted, remove the bowl from the pan of water and stir until completely melted and well mixed.



- Pour the chocolate out onto a cookie sheet without sides or if it has sides, turn it upside down and use the bottom of the cookie sheet.



- Spread the chocolate into a rectangle over the surface of the cookie sheet. Allow the chocolate to stand at room temperature until firm to the touch. To hurry this process along, place in the freezer for a couple of minutes.



Test for firmness by touching the chocolate with your finger. It should not make an impression in the chocolate.



- Once the chocolate is firm, start scraping it with the edge of a metal spatula. If the chocolate breaks into pieces rather than forming a curl, it is too firm. Allow it to set a couple of minutes at room temperature and try again.



- Place the curls on a plate, cookie sheet, or wax paper and leave them until ready to use. If you are not going to use the curls immediately, store them in the refrigerator until you are ready to use.



- Use a toothpick to pick up the curls and apply to the cake to decorate as desired.



- They can be piled in the center of the cake or placed in whatever decorative pattern you choose.



Frozen Desserts

Frozen dessert is the generic name for desserts made by freezing liquids, semi-solids, and sometimes even solids. Nothing beats the heat on a summer's day than a cooling ice cream. Ice cream consists of cream slowly stirred in a churn to freeze it to a creamy consistency. Gelato uses a milk base instead of cream and has less air mixed into it than ice cream. **Frozen custard** uses a cooked base of egg yolks. For a dairy-free dessert, try a sorbet, which is made from churned fruit purees. Frozen yogurt uses yogurt rather than the heavier cream base of ice cream, which also makes it a lower calorie treat.

Keyword

Frozen custard is a cold dessert similar to ice cream, but made with eggs in addition to cream and sugar. It is usually kept at a warmer temperature compared to ice cream, and typically has a denser consistency.

Useful terminology

There are some useful terminology, such as:

Overrun: The amount of air churned into a churn-frozen product. This is also an indicator of quality, because the more superior kinds contain enough air to make them light while the inferior products contain an excess of overrun. Ingredients used in making the frozen dessert also effect the level of overrun.

Mouthfeel: This refers to the texture of a frozen dessert. The desserts with a higher fat content tend to have a smoother mouthfeel while desserts low on fat, like sorbets, have a more textured mouthfeel.

Stabilisers: These are added to frozen desserts to improve their texture and freezing abilities. Sometimes, through the process

of churning, there is some leftover water that does not freeze. These stabilisers help bind that water. This is widely used for commercial purposes, in inexpensive frozen desserts.



Churning: This one is an important one. It does not matter what kind of frozen dessert you are attempting- cooling the ice cream base is extremely important so that your final product has a smooth texture to it. The logic behind this is that the longer a mixture takes to freeze, the more time it has to develop large ice crystals. If your ice cream base is well chilled, this can be avoided.

Inclusions: Refers to nuts and pieces of fruits or even chocolate, which can be seen in ice creams. These are added towards the end of the churning process so that they retain their shape and size.

Types of Frozen Desserts

Here are the different types of frozen desserts, of both the churned and semifreddi form.

Sorbet

This refreshing dessert is usually a churned mixture of sugar, water and fruit juice, but also uses wine, liqueurs and other flavoring agents. It is usually served between course meals as a palate refresher, but is also served as just a dessert. There are varied processes to make sorbet, some involving sugar syrup to add to the body and flavor and others including pasteurized egg whites, to improve texture.



Parfait

This one differs depending on which country you are in. In the United States, this refers to a portion of ice cream layered with sauce and served in a tall glass. In France, it is a more complex mixture of cooked and whipped egg yolks, into which whipped cream and flavor is folded and the mixture is then frozen.



Granita

This dish is made from freezing ice and flavoring in a shallow stainless steel container, which is then scraped off to obtain grainy flakes of ice. Compared to the sorbet, this has a lower sugar content.

Keyword

Sorbet is a frozen dessert made from sweetened water with flavoring (typically fruit juice or fruit purée, wine, and/or liqueur, and very rarely honey).



Bombe

Bombes are created using ring or silicon molds, which are lined with sponge cake and then filled with either ice cream, **sorbet** or parfait, or a mixture of the three. Traditionally, the mound is in an oval shape and are sealed before the mixture is frozen. The mound usually has handles, which allows the pastry chef to easily remove the frozen bombe from the mold by dipping it in warm water.

REMEMBER

Peel two raw apples and cut them into small pieces, say about half an inch square, also cut some celery the same way, and mix it with the apple. Be very careful not to let any seeds of the apples be mixed with it. The salad must be dressed with a good mayonnaise.



Gelato

An Italian style of ice cream made with milk, gelato is widely known to have a low milk-fat content, although this is not a reflection on the flavor. Despite its low fat and calorie content, it tends to have a more concentrated flavor than ice cream. Similar to ice cream, it is a custard that is churned during freezing.



Spoom

This is a frothy version of the sorbet, with a lighter syrup requirement than the sorbet. Like sorbet, it is made with fruit juices, wines and liqueurs. However, during the course of setting, it is mixed with Italian meringue. The name comes from the Italian word for foam, spuma, and is indicative of the lightness and texture of the dessert.



Ice cream

The most popular and universally recognized frozen dessert is the ice cream. The procedure for making ice cream involves custards being churned during the process of freezing. Ice creams are usually high on milk fats and this is what gives them their creamy, rich texture. The higher the quality of ice cream, the higher the level of milk fat. The French style of ice cream contains a higher level of egg yolk and cream than the standard ice creams.



CASE STUDY

A BAKERY COMES BACK FROM THE DEAD

It was an all-too-familiar story line out of Detroit: Last November, the owners of Awrey Bakeries announced their plans to close down the 103-year-old business, a hometown favorite, and lay off its 203-person work force.

Best known for its chocolate ripple cakes and windmill cookies, Awrey Bakeries is one of the largest privately owned baking facilities in the U.S., occupying a 218,000-square-foot factory in Livonia, Michigan, a suburb just outside downtown Detroit. Though Awrey was best known in the Midwest, it also had national distribution deals with institutional clients such as the U.S. Army. At its peak, the bakery did an estimated \$75 million in revenue and employed about 400 workers, the majority of whom were unionized.

Last November 28, Awrey's employees were told that unless new owners or investors were found, the company would be forced to close its doors within 60 days. With no buyer in sight, the company laid off its entire staff this February and arranged to auction off its physical assets, including baking equipment, stand mixers, flour hoppers, and cooling racks.

The auction was scheduled for February 20. In true storybook fashion, disaster was averted when two local businessmen, Ron Beebe and Jim McColgan, struck an 11th-hour deal on February 19 to buy the company and all its assets.

The rescue of Awrey Bakeries was good news for the economically depressed Detroit region. Beebe and McColgan were lauded as heroes in the Detroit press. On March 11, local officials joined them for a ribbon-cutting ceremony to mark the reopening of the bakery.

The Problem

Despite these good vibes, Awrey has already been through one unsuccessful restructuring and remains a deeply troubled company. When Hilco Equity Partners and Monomoy Capital Partners purchased the company in 2005, they streamlined Awrey's roster of products and eliminated about 300 items. In a bid to capture a more affluent market, the new owners also bought Atkins Elegant Desserts, an Indiana bakery that specialized in cheesecakes and decorated cakes.

The new strategies seemed to be helping. In 2010, Awrey had 227 employees, produced 40 million pounds of baked goods, and generated approximately \$68

million in revenue. By 2012, however, revenue had dropped to \$60 million, and the company laid off about 15 percent of its work force.

Roughly 200 Awrey employees remained, 157 of whom were part of United Distributive Workers, Council 30. In the spring of 2012, they accepted a \$2-an-hour wage cut to continue working, the second negotiated cut in eight years. Less than a year later, they all lost their jobs.

The uncertainty surrounding the company's fate left many of Awrey's customers looking for other suppliers. "Our competition is the biggest hurdle," McColgan says. "When Awrey was out of business, the competition went to many of the former Awrey customers and tried to pick them up."

The Decision

McColgan and Beebe say that childhood memories of Awrey products were a big factor in their decision to purchase the company. Nostalgia aside, both are betting that Awrey can be a profitable business once more. "We are going to be very aggressive and very customer focused," McColgan says.

McColgan is an entrepreneur who has been in the food business for 25 years. He has owned and run three bakeries, as well as a frozen-foods-distribution company, an ice cream manufacturer, and several restaurants. Beebe, a private equity investor and former accountant, is the designated money guy.

Their strategy includes getting Awrey products back into retail stores in Detroit and, in a nod to the growing number of people with wheat allergies, to launch a line of gluten-free products.

The new line fits in well with Beebe's other holdings, which include a gluten-free bakery called Mrs. Glee's Gluten Free Foods.

The Aftermath

Since February, the owners have hired back about 50 of the laid-off workers. McColgan says he hopes to hire the other terminated employees as sales allow.

The cost of labor will probably be a factor in the company's future. The workers are not unionized. McColgan would not speculate on the possibility of them becoming organized again, although he did add that Awrey and the United Distributive Workers have always been on excellent terms.

So far, the pair is cautiously optimistic about Awrey's future. McColgan declined to speculate on the company's 2013 prospects, but it has been reported that Awrey needs \$22 million in revenue to break even this year.

The Experts Say...

Offer healthier options

Modern consumers want healthful and nutritious snacks. Awrey needs a contemporary identity, and it has to change its messaging to consumers so it can be seen as part of the health wave. It should use social media to get the word out about Awrey's new products. Gluten free is still a niche market, and it's not big enough to sustain a business on its own, but it's a great idea to look to markets like this.

--Charles Rothstein

Co-Founder of Beringea, a private equity firm based in Farmington Hills, Michigan

Reclaim your shelf space

I am a lifelong Detroit, and Awrey is a household name. If it was just another brand, it would have to compete on price and quality, but in this town, Awrey is viewed as a premium brand. Awrey's biggest challenge will be expanding its network of grocery-store retailers. It's had to reduce its costs over the years, but now it's a matter of selling products consumers want. The company has to expand its product line.

--Van Conway

CEO of Conway MacKenzie, Detroit-based turnaround experts

Focus on employees

The owners need to instill in the employees the esprit de corps that you need in a turnaround. The union employees took two wage cuts in eight years. That does not make for happy employees. The owners should create incentive programs for the employees--say, for every dollar the company makes, 2 percent will be put into an employee fund. They could do a paid company lunch each month, where employees are free to ask the executives questions. Anything would help.

--Chuck Benjamin

President of Benjamin Capital Advisors, an advisory firm based in Rye Brook, New York

SUMMARY

- Salad is a combination of various ingredients that is either raw, cooked or both. The ingredients used can be any vegetable, meat, fish, fruits as a main ingredient or in combination depending on its type like simple salad, compound salad, tossed salad.
- A salad is a food served with a dressing that can be a cold dish or green vegetables or a mix of fruits or frozen mixture of food or chopped food.
- Apples are certainly ideal and can easily combine with a number of different other salad ingredients also.
- Many cultures have a long history of the cultivation and collection of greens for use in salads, since leafy greens are beneficial to human health and digestion.
- If your salad contains a lot of vegetables with high water content, like tomatoes and cucumbers, you might want to consider adding more protection by layering paper towels in between layers of salad.
- Many fruits are high in fiber and an assortment of vitamins, especially if their peels are left on, as in the case of apples, grapes, kumquats, and other fruits with edible rinds or peels.
- A dessert salad is an excellent option that is enjoyed by many different types of people, and represents something a little different than the more traditional cookies, cakes, and pies often found at events.

MULTIPLE CHOICE QUESTIONS

1. Which salad has any combination of ingredients that are arranged carefully on a plate or bowl?
 - a. Bound
 - b. Composed
 - c. Vegetable
 - d. Combination
2. The part of the salad that enhances the appearance of the salad while also complementing the overall taste is called the
 - a. base.
 - b. body.
 - c. garnish.
 - d. dressing.
3. Egg salad is an example of which type of salad?
 - a. Bound
 - b. Tossed
 - c. Composed
 - d. Combination
4. What are the two main ingredients of vinaigrette?
 - a. Vinegar and oil
 - b. Water and vinegar
 - c. Oil and butter
 - d. Vinegar and garlic
5. What is a garnish of onions called?
 - a. Doria
 - b. Clamart
 - c. Lyonnaise
 - d. Parmentier
6. In a main dish salad, the body of the salad is made up mainly of:
 - a. fruit
 - b. greens
 - c. meat
 - d. salad dressing
 - e. none of the above

7. A main dish salad must contain which nutrient?

- a. carbohydrates
- b. protein
- c. fat
- d. vitamin C
- e. all of the above

REVIEW QUESTIONS

1. How to keep salad greens and fresh?
2. What are the use of salad creams?
3. Define the techniques of fruit preparation for salad.
4. How to dressing a fruit salad?
5. Explain the techniques of plated desserts.

Answer to Multiple Choice Questions

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (b) | 2. (c) | 3. (a) | 4. (a) | 5. (c) |
| 6. (b) | 7. (b) | | | |

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CHAPTER 7

FOOD QUALITY ASSURANCE AND SAFETY

INTRODUCTION

Food is a major determinant of health, nutritional status and productivity of the population. It is, therefore, essential that the food we consume is wholesome and safe. Unsafe food can lead to a large number of food-borne diseases. You may have seen reports in the newspapers about health problems caused by contaminated or adulterated foods. Globally, foodborne illness is a major problem of public health concern. In India, the Ministry of Health and Family Welfare, in September 2010 stated that more than 300 million episodes of acute diarrhea occur every year in children less than five years of age. Food-borne illness can not only result in mortality but can damage trade and tourism, lead to loss of earnings, unemployment and litigation and thus can impede economic growth, and therefore food safety and quality have gained worldwide significance. Food safety provides an assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. Safety is

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Discuss on food safety, quality and consumer protection
2. Know about food laws and regulations
3. Develop a food safety program
4. Learn about the food safety program for catering enterprise
5. Define HACCP prerequisite program premises and facilities

a component of quality. In fact, many experts have argued that safety is the most important component of quality since a lack of safety can result in serious injury and even death for the consumer of the product. Safety differs from many other quality attributes since it is a quality attribute that is difficult to observe. A product can appear to be of high quality, i.e. well colored, appetizing, flavorful, etc. and yet be unsafe because it is contaminated with undetected pathogenic organisms, toxic chemicals, or physical hazards. On the other hand, product that seems to lack many of the visible quality attributes can be safe. Obvious quality defects can result in consumer rejection and lower sales, while safety hazards may be hidden and go undetected until the product is consumed. Since assuring safety is vital to public health, achieving safety must always take precedence over achieving high levels of other quality attributes. Food safety is not limited to microbiological safety. As recent history has demonstrated with bovine spongiform encephalitis (BSE) and Variant Creutzfeldt-Jakob disease (vCJD), anaphylactic shock from eating peanuts, dioxins entering the human food chain via animal feedstuffs, benzene in mineral water and glass fragments in baby food, food safety also includes chemical contamination and foreign bodies. Prions, the cause of BSE and vCJD, are an entirely new source of food-borne disease. Food-borne viruses are becoming recognized as significant to public health. As the examples of benzene and dioxins demonstrate, food safety is not necessarily about real risk to public health, but also about perceived risk.

FOOD SAFETY, QUALITY AND CONSUMER PROTECTION

The terms food safety and food quality can sometimes be confusing. Food safety refers to all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer. It is not negotiable. Quality includes all other attributes that influence a product's value to the consumer. This includes negative attributes such as spoilage, contamination with filth, discoloration, off-odors and positive attributes such as the origin, color, flavor, texture and processing method of the food. This distinction between safety and quality has implications for public policy and influences the nature and content of the food control system most suited to meet predetermined national objectives.

Food control is defined as:

....a mandatory regulatory activity of enforcement by national or local authorities to provide consumer protection and ensure that all foods during production, handling, storage, processing, and distribution are safe, wholesome and fit for human consumption; conform to safety and quality requirements; and are honestly and accurately labelled as prescribed by law.

The foremost responsibility of food control is to enforce the food law(s) protecting the consumer against unsafe, impure and fraudulently presented food by prohibiting the sale of food not of the nature, substance or quality demanded by the purchaser.

Confidence in the safety and integrity of the food supply is an important requirement for consumers. Foodborne disease outbreaks involving agents such as *Escherichia coli*, *Salmonella* and chemical contaminants highlight problems with food safety and increase public anxiety that modern farming systems, food processing and marketing do not provide adequate safeguards for public health. Factors which contribute to potential hazards in foods include improper agricultural practices; poor hygiene at all stages of the food chain; lack of preventive controls in food processing and preparation operations; misuse of chemicals; contaminated raw materials, ingredients and water; inadequate or improper storage, etc.

Specific concerns about food hazards have usually focused on:

- Microbiological hazards;
- Pesticide residues;
- Misuse of food additives;
- Chemical contaminants, including biological toxins; and
- Adulteration.

The list has been further extended to cover genetically modified organisms, allergens, veterinary drugs residues and growth promoting hormones used in the production of animal products.

Consumers expect protection from hazards occurring along the entire food chain, from primary producer through consumer (often described as the farm-to-table continuum). Protection will only occur if all sectors in the chain operate in an integrated way, and food control systems address all stages of this chain.

As no mandatory activity of this nature can achieve its objectives fully without the cooperation and active participation of all stakeholders e.g. farmers, industry, and consumers, the term Food Control System is used in these Guidelines to describe the integration of a mandatory regulatory approach with preventive and educational strategies that protect the whole

Keyword

Hazard Analysis

Critical Control

Point (HACCP) is a

management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.

food chain. Thus an ideal food control system should include effective enforcement of mandatory requirements, along with training and education, community outreach programs and promotion of voluntary compliance. The introduction of preventive approaches such as the **Hazard Analysis Critical Control Point System (HACCP)**, have resulted in industry taking greater responsibility for and control of food safety risks. Such an integrated approach facilitates improved consumer protection, effectively stimulates agriculture and the food processing industry, and promotes domestic and international food trade.

Food Quality and Food Safety Concern

Food quality, as distinct from food safety, is the extent to which all the established requirements relating to the characteristics of a food are met. Common examples of quality characteristics of food, excluding the food safety characteristics, are:

- Identity of a food in relation to a standard (e.g., standardized food)
- Declared gross or net quantity (e.g., weight or volume) of a unit of the food or net fill of a food container
- Declared or claimed amount of one or more stated components of a food
- Appearance (e.g., size, shape, color)
- Flavor
- Aroma
- Texture
- Viscosity
- Shelf-life stability
- Fitness for use as human food
- Wholesomeness
- Adulteration
- Packaging
- Labeling

Some of these quality characteristics are covered in food laws and regulations. For instance, failure of a food to meet regulatory requirements relating to a standard of identity, the declared quantity, declared ingredients, or label claims, can be considered as misrepresentation, misbranding, or fraud. The spoilage, deterioration, or decomposition of foods with the absence of any resulting harmful substance that can lead to illness or injury, can be considered as failure to meet food quality requirements based on fitness for human use or wholesomeness criteria. Unacceptable levels of foreign matter or extraneous materials that are not necessarily harmful to health or do not cause

injury can also be considered as failure to meet food quality requirements; in the U.S., defect action levels have been established for naturally occurring, unavoidable, extraneous materials in many foods. The Codex Alimentarius defines the term food suitability (distinct from food safety) as the assurance that food is acceptable for human consumption according to its intended use; food suitability criteria include fitness for human use, wholesomeness, and extraneous matter.

The quality requirements established by government regulations, numerous requirements for food quality characteristics are also established by customers and consumers. Purchases of food from a manufacturer or supplier by customers and consumers depend on whether the food meets the quality requirements established by the customer or the expectation of the consumer.

Food safety is the assurance that food will not cause harm to the consumer when it is prepared and eaten according to its intended use. All requirements relating to the safety characteristics of a food must be met; there must be no unacceptable health risk associated with a food. The assurance that a food will not cause harm, injury, or illness is determined by:

- whether all harmful substances present in the food have been eliminated, reduced to an established acceptable level, or prevented from exceeding the acceptable level; and
- the food has been prepared, handled, and stored under controlled and sanitary conditions in conformance with practices prescribed by government regulations. The harmful substances in foods are food safety hazards. The prescribed conditions and practices for preparing, handling, and storing food are considered GMPs

Systems and Programs for Food Quality

The food industry, like many other industries, has used basic quality control programs, and more complex quality assurance programs and quality management systems, in its efforts to achieve food quality; some food companies use the ISO 9000 Quality Management System Standard. These programs and systems can include components that are devoted specifically to food safety. For instance, GMPs and the HACCP system can be integrated into a food industry, quality management system, or inspection and monitoring of materials, products, and processes for food safety hazards can be part of a quality control program. It is devoted to quality programs and quality systems that are used to achieve food quality and food safety.

Systems and Programs for Food Safety

For decades, the food industry has depended on the use of quality programs based

on inspection and testing of food products for hazards, and on GMPs for addressing food safety. Since the late 1980s, there has been widespread use of the HACCP system specifically to achieve food safety; the system addresses food safety primarily on the basis of prevention or elimination of unacceptable hazard levels. The GMPs, which were used to address food safety requirements prior to the use of the HACCP system, have been incorporated into prerequisite programs for the HACCP system. A food company that does not operate with the HACCP system must continue to use the GMPs.

Global Considerations

- (a) **International Trade.** With an expanding world economy, liberalization of food trade, growing consumer demand, developments in food science and technology, and improvements in transport and communication, international trade in fresh and processed food will continue to increase.

Access of countries to food export markets will continue to depend on their capacity to meet the regulatory requirements of importing countries. Creating and sustaining demand for their food products in world markets relies on building the trust and confidence of importers and consumers in the integrity of their food systems. With agricultural production the focal point of the economies of most developing countries, such food protection measures are essential.

- (b) **Codex Alimentarius Commission.** The Codex Alimentarius Commission (CAC) is an intergovernmental body that coordinates food standards at the international level. Its main objectives are to protect the health of consumers and ensure fair practices in food trade. The CAC has proved to be most successful in achieving international harmonization in food quality and safety requirements. It has formulated international standards for a wide range of food products and specific requirements covering pesticide residues, food additives, veterinary drug residues, hygiene, food contaminants, labelling etc. These Codex recommendations are used by governments to determine and refine policies and programs under their national food control system. More recently, Codex has embarked on a series of activities based on risk assessment to address microbiological hazards in foods, an area previously unattended. Codex work has created worldwide awareness of food safety, quality and consumer protection issues, and has achieved international consensus on how to deal with them scientifically, through a risk-based approach. As a result, there has been a continuous appraisal of the principles of food safety and quality at the international level. There is increasing pressure for the adoption of these principles at the national level.

- (c) **SPS and TBT Agreements.** The conclusion of the Uruguay Round of

Multilateral Trade Negotiations in Marrakech led to the establishment of the WTO on 1 January 1995, and to the coming into force of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT). Both these Agreements are relevant in understanding the requirements for food protection measures at the national level, and the rules under which food is traded internationally.

The SPS Agreement confirms the right of WTO member countries to apply measures to protect human, animal and plant life and health. The Agreement covers all relevant laws, decrees, regulations; testing, inspection, certification and approval procedures; and packaging and labelling requirements directly related to food safety. Member States are asked to apply only those measures for protection that are based on scientific principles, only to the extent necessary, and not in a manner which may constitute a disguised restriction on international trade. The Agreement encourages use of international standards, guidelines or recommendations where they exist, and identifies those from Codex (relating to food additives, veterinary drugs and pesticide residues, contaminants, methods of analysis and sampling, and codes and guidelines of hygienic practices), to be consistent with provisions of SPS. Thus, the Codex standards serve as a benchmark for comparison of national sanitary and phytosanitary measures. While it is not compulsory for Member States to apply Codex Standards, it is in their best interests to harmonize their national food standards with those elaborated by Codex.

The TBT Agreement requires that technical regulations on traditional quality factors, fraudulent practices, packaging, labelling etc. imposed by countries will not be more restrictive on imported products than they are on products produced domestically. It also encourages use of international standards.

Keyword

Senior management is generally a team of individuals at the highest level of management of an organization who have the day-to-day tasks of managing that organization — sometimes a company or a corporation.

Responsibility for Food Quality and Food Safety

The overall responsibility for food quality and food safety is shared by all segments of the food system, including the various food industry sectors, government regulatory agencies, and

consumers in general. The food industry has both the legal and moral responsibility for providing customers and consumers with foods that meet all established quality and safety requirements. Within a food company, overall responsibility for the implementation and effective use of these programs and systems rests with **senior management**.

Governments worldwide have enacted food laws and regulations designed to ensure that foods are fit for human consumption. Such laws protect consumers from harm resulting from unsafe foods and from deception resulting from misrepresentation or fraud relating to certain established food quality characteristics. Governments have also established various agencies that enforce these food laws and regulations; this legal framework is intended to provide consumers with confidence in the safety and quality of foods.

Within the food supply chain, customers who purchase raw materials, ingredients and food contact packaging materials for manufacture of consumer foods, must ensure that these materials are safe and fit for use. When making purchases, consumers need to be vigilant in their assessment of foods for safety and quality. In particular, customers and consumers must pay attention to the instructions for handling, storage, preparation, and use of foods.

Distinction between Food Quality and Food Safety

While the terms food quality and food safety are often used interchangeably, it is important for the food industry professional to distinguish between them. Food quality is the extent to which the all the established requirements relating to the characteristics of a food are met. Food safety is the extent to which those requirements relating specifically to characteristics or properties that have the potential to be harmful to health or to cause illness or injury are met. Some food quality characteristics (e.g., counts of total bacteria, coliform bacteria) can be used as indicators of food safety, although they are not considered specifically as food safety characteristics. This distinction between food quality and food safety needs to be made, primarily because of the much greater importance that must be attached to protecting consumers from food-borne illnesses or injuries. A food that does not conform to the food safety requirements automatically does not conform to the food quality requirements. On the other hand, a food can conform to the food safety requirements, but not conform to the other quality requirements.

Food Safety as Part of Food Quality

In the food industry, food safety principles and practices have always been integrated into activities identified within quality assurance or quality control programs, or

within quality management systems; therefore, these programs and systems can address both food quality and food safety simultaneously. The more recent use of HACCP systems in some food companies has resulted in a well-defined set of activities that are specifically devoted to food safety. The principles and practices of the HACCP system are similar to those of quality systems and, therefore, the specific activities required by the HACCP system can be integrated within quality systems. A food company that operates with a quality management system can be expected to have an HACCP system that is devoted specifically to food safety as an integral part of its quality management system. A food company that does not operate with the HACCP system must continue to incorporate food safety activities and GMPs within its existing quality program or quality system.

Government agencies that use HACCP-based programs to monitor and enforce food laws and regulations are essentially addressing food safety and fitness for use as human food. The HACCP-based programs do not address some of the quality aspects of food laws and regulations. Nevertheless, it is common for the same government agency to monitor and enforce both the food safety and food quality aspects of those laws and regulations. Examples of HACCP-based programs that are used by government regulatory agencies are the U.S. Food and Drug Administration Seafood HACCP Regulation, and Juice HACCP Regulation; the U.S.

FOOD LAWS AND REGULATIONS

The legal requirements for food safety and food quality have been established by many national governments, with the objective of protecting consumers and ensuring that foods are fit for human consumption. These requirements are contained in food laws and regulations, the scope of which varies from one country to another. In the U.S. and Canada, food laws and regulations govern all aspects of food safety and some aspects of food quality. The food laws and regulations of the U.S. are likely the most extensive of any country. It is essential that food industry professionals be familiar with the laws and regulations that govern their specific industry sectors in their countries.

The legal framework of food laws and regulations of a particular country depends on the overall government regulatory system of that country. In the U.S. and Canada, the federal or national food laws are statements of government policies that cover both the general and specific aspects of adulteration and misbranding of foods, while the food regulations deal with the enforcement of government policies that are embodied in the food laws. These food laws and regulations are intended to ensure that foods do not cause harm, illness, or injury; are not adulterated or misbranded; and are wholesome and fit for human consumption. Food laws and regulations apply to all foods produced domestically, as well as all foods imported into a country;

foods cannot be imported if they do not conform to the food laws and regulations of the importing country. Examples of food laws are the U.S. Federal Food, Drug, and Cosmetic Act (FDCA), which is the primary law governing the safety and quality of most foods in the U.S., and Canada's Food and Drugs Act, which is the primary food law in Canada. The U.S. Code of Federal Regulations (CFR) and Canada's Food and Drug Regulations are examples of food regulations that address food safety and food quality.

Food laws protect consumers from illnesses and injury by prohibiting the presence of any poisonous or harmful substance in foods that are intended for human consumption. For example, in the U.S., adulterated food is regulated primarily under the FDCA, which covers all aspects of food safety and certain aspects of food quality. In addition, food laws protect consumers from fraud and deception by prohibiting false or misleading information relating to foods. For example, in the U.S., misbranded food is prohibited under the FDCA.

Enforcement of Food Laws and Regulations

The responsibility for enforcing food laws and regulations is assigned to government regulatory agencies. These enforcement activities fall into two categories. First, they include inspection and audit of establishments that process, handle, and store food to ensure that the required sanitary and controlled conditions are followed; audits are used by some regulatory agencies that enforce HACCP-based regulations. Second, they include inspection and analysis of foods for harmful substances to ensure that there is conformance to established limits and tolerances.

Despite efforts of government agencies to enforce food laws and regulations, misbranded foods or foods that cause harm or have the potential to cause harm sometimes enter the food distribution chain or the consumer market. Whenever a misbranded food is detected, a harmful substance or agent is detected in a food, it is determined that there is a likelihood for a harmful substance or agent to be present in a food, or an actual food-borne illness or injury occurs, food companies and government regulatory agencies take the necessary action to protect consumers against these violations. These situations often result in the food being recalled from the marketplace. In addition, if it is determined that adulterated or misbranded food has been produced as a result of negligence on the part of a food company, legal action can be taken against the company.

Quality Control Programs

Quality control program activities consist of inspecting, testing, and monitoring associated with raw materials control, process control, and finished products control.

The main objective of food industry quality control programs is to determine whether the quality and safety requirements are fulfilled by detecting whether unacceptable levels of hazards or defects exist in foods. If an unacceptable level of a hazard or defect is detected, the food might be repaired or reworked to remove the hazard or defect so that it fulfils the requirements, or it might be rejected entirely and scrapped.

The goal of a food company's quality control program is to ensure that all requirements are fulfilled so that only safe foods of acceptable quality are sent to its customers or to consumers. In companies that operate with quality systems, the quality control activities are integrated into the quality systems.

Quality Control Functions

Quality control specialists most commonly work for manufacturing facilities, although quality control specialists can be found in nearly every industry. Quality control specialists ensure that the department or process they work with meets minimum quality standards. Processes vary, depending on the specific process involved. All quality control processes share some common functions.

Testing: The most basic function of quality control involves testing. Quality control specialists test the manufacturing process at the beginning, middle and end to ensure that the production quality remains the same throughout. If the specialist discovers an issue at any point in the process, she works with the production team to remedy the issue. Quality control specialists perform quality control tests for services provided as well, evaluating the quality of a specific service at specified intervals throughout the time of service. Testing provides quality results as of the date of testing.

Monitoring: Monitoring consists of ongoing testing that the quality control specialist performs on a regular basis. The specialist repeats the testing and records the results of each test. After the specialist has performed several tests, he reviews the results and looks for any trends in quality. If the quality declines, he increases the amount of testing performed in that area. If the quality maintains or improves, he decreases the amount of testing performed in that area. The quality control specialist continues to monitor the trending of the results.

Auditing: Quality control specialists also spend time auditing the quality of a process which the specialist doesn't work with. The quality control specialist may be auditing the work of the regular quality control work performed or auditing the quality of a process without any current quality control work. When performing the audit, the quality control specialist reviews the results reported by the regular

quality control workers to determine if they performed the original tests correctly.

Reporting: Periodically, the quality control specialist reports the quality results to management. A high number of quality problems mean something is wrong with the process and there may be many unhappy customers for the company. Management reviews the number of quality problems and where they occur in the process and take action to address the issue.

Quality Assurance Systems

Quality assurance systems in the food industry are much more extensive in scope than quality control programs. They include the inspection, testing, and monitoring activities of quality control programs, along with additional activities that are devoted to prevention of food safety hazards and quality defects. The activities are integrated and interrelated to form a system. Quality assurance systems are intended to provide confidence to a food company's management, its customers and to government regulatory agencies that the company is capable of meeting the food quality and food safety requirements. These quality systems include documents that describe operations and activities that directly relate to food quality and safety.

The following examples using baked goods illustrate the difference between quality control and quality assurance. A customer may specify that bread should be white, with a good loaf volume and pleasant flavor and taste. The manufacturer then needs to focus on the process to ensure that the raw materials are consistently handled to produce uniform white loaves with the expected volume and taste.

Controlling quality may be achieved by:

- Inspection of raw materials to ensure that no poor quality ingredients are used.
- Carrying out checks on the process to ensure that the weights of the ingredients and temperature and time of baking are correct.
- Inspecting the final product to ensure that no poor quality loaves are sent to the consumer.

However, this Quality Control approach is focused on the process whereas the problems that customers may face can also occur elsewhere in the production and distribution chain. The following examples highlight the shortcomings of a simple quality control approach.

Problem:	Many of the loaves are contaminated with pieces of wood.
Reason:	The distribution system involves transporting the loaves on wooden trays to retail stores where the loaves are packaged and then sold to customers. The wooden trays are not part of the quality control system because they are used after the product has left the bakery.
Problem:	A particular customer has asked for loaves of a different size and color but these do not arrive as requested.
Reason:	The sales staff have no formal procedure for informing the production staff about changes in this customer's specification. The problem has occurred because of missing links in quality management in the bakery.
Problem:	Bread has been returned because of a bad flavor and some customers have complained that they have been made ill.
Reason:	The flour has been stored next to cleaning chemicals in the dry goods store. One old unlabeled chemical container has been found to have leaked. The company have no documented rules for the storage and handling of chemicals. The staff who routinely clean the store are not trained and receive lower wages than other members of the production team. The container is old and unlabeled (Fig. 1).

REMEMBER

Quality Assurance systems take a much wider view of what is involved in satisfying customers' needs. The quality assurance system focuses on the prevention of problems and not simply on their cure. Curing problems is expensive and quality cannot be 'inspected into' a product.

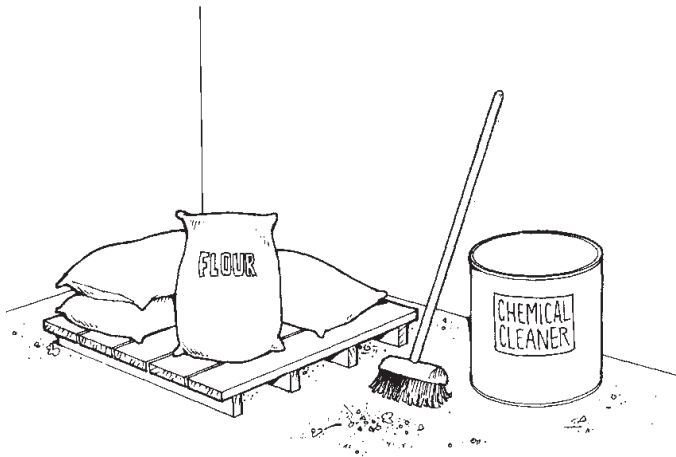


Figure 1: Hazardous storage of chemicals

In order to overcome the types of problems outlined above, a wider approach than quality control is required. This is termed Total Quality Assurance.

Kitchen Essentials and Basic Food Preparation

A quality assurance approach therefore, includes the whole production and distribution system, from the suppliers of important raw materials, through the internal business management to the customer. Quality assurance systems should be documented in a simple way to show who has responsibility for doing what and when. The focus of quality assurance is prevention and this should mean that action is taken to meet a specification and prevent failures from occurring a second time. This is done by planning, management action, agreements with key suppliers and other people in the distribution chain.

Quality assurance can only be operated when staff are well trained and motivated. Workers are normally well aware of the causes of most problems and when quality assurance is used properly they can resolve most quality problems within their control. It is the responsibility of business owners to ensure that the quality assurance system, together with any necessary equipment and information, are available to the workers to allow them to exercise this control. The importance of people in quality assurance is represented in Fig. 2.

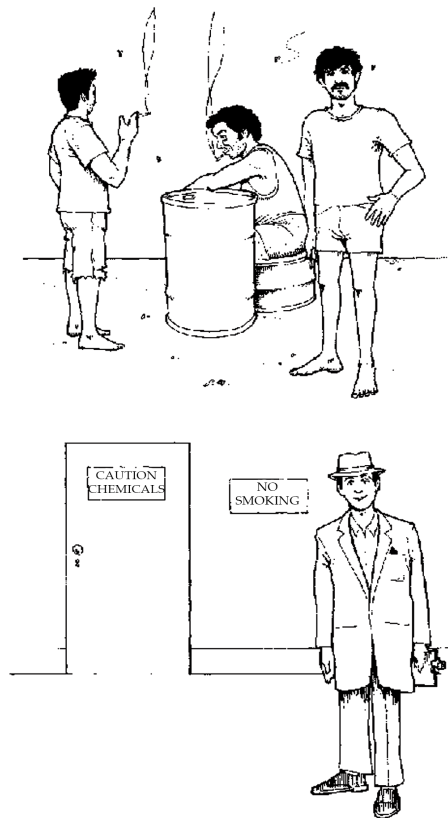


Figure 2: Good staff are important in quality assurance

It is important to recognize that any system is operated by people. It is people who manufacture a food product and ensure that it has the right quality. People working together ensure that the information, materials and equipment are all correct to allow the production of a product. People also store the product and deliver it on time. All therefore need the necessary training and skills to complete their tasks correctly. They need to know what their own responsibilities are in this quality chain and where they fit into the overall system.

Business owners must not regard communication as a one-way process. The information they send to workers must also be modified by feedback from the staff. Well trained and informed staff are an essential element of the Quality Assurance approach. The other main element of the quality assurance approach which ensures that the system works is to document in a simple way the procedures and responsibilities within a team of workers.

Consider the problems faced by the bakery described previously:

- Problem 1. The use of wooden trays: This problem was related to the use of trays by the distributor. Who was responsible for arranging the contract with the distributor and specifying the use of wooden trays?

A quality assurance system ensures that this link in the chain is discussed by the manager and staff and that proper controls and arrangements with the distributor are put into place (for example, plastic sheets on the wooden trays). The producer needs to use the complaint information to modify the process and prevent the complaint occurring again. The types of complaints should be recorded, sources of the problem identified within the factory or supply chain and control measures put into place.

- Problem 2. The customer requiring special bread: The internal business communication broke down and important information did not reach the production staff.

A quality assurance system ensures that this communication is constantly operating and being improved. Responsibility and authority are defined and written down.

- Problem 3. Tainted bread causing sickness: The management had not identified and controlled the potential hazard that improper handling and storage of chemicals can cause. The effective creation of a quality assurance system should include an assessment and development of methods to control or prevent hazards.

Quality Assurance systems are not mysterious and need not be complex. They simply require the business to agree what are the customers' needs and then ensure that staff have the skills, materials, and information needed to deliver the promises that are made.... every time. A quality assurance system should not be static but it should be continually modified and refined.

This requires an investment in training people to ensure that the quality assurance system controls the essential steps in the whole manufacturing and distribution process to satisfy customer needs.

A range of problem solving techniques can be provided for process workers to use when trouble arises during production. These simple techniques are tried and tested. They involve problem identification, analysis of the cause, suggestions for solutions and implementation and feedback methods. These techniques allow the operators more control over their work and allow problems to be prevented rather than solved. More advanced statistically-based methods can be used for sampling plans and process optimization but these are beyond the scope of this book.

DEVELOP A FOOD SAFETY PROGRAM

A Food Safety Program is a documented set of steps that aim to prevent problems with food safety before they occur, rather than relying on a reactive approach once problems have already occurred. A Food Safety Program covers all aspects of food service in your business, and has procedures for each food process step to keep food safe. It also includes systems that keep food safe across all aspects of food handling, such as pest control, staff health & hygiene, cleaning, waste management, recall procedures or staff training.

Food safety is about handling, storing and preparing food to prevent infection and help to make sure that our food keeps enough nutrients for us to have a healthy diet. Unsafe food and water means that it has been exposed to dirt and germs, or may even be rotten, which can cause infections or diseases such as diarrhoea, meningitis, etc. These diseases can make people very sick or even be life threatening. When people are sick, they are weak and would have difficulty working or concentrating at school. Some of these infections also make it difficult for our bodies to absorb the nutrients they need to get healthy. Unsafe or stale foods also deteriorate and be of poor quality, which means they lose nutrients and so we do not get enough of what we need for a healthy diet. So unsafe food can also lead to poor nutrition. The great majority of people will experience a food or water borne disease at some point in their lives. This highlights the importance of making sure the food we eat is not contaminated with potentially harmful bacteria, parasites, viruses, toxins and chemicals. Over the past half century, the process by which food gets from the farm to the plate has changed drastically. Food contamination that occurs in one place may affect the health of consumers living on the other side of the planet. This means that everyone along the production chain, from producer to consumer, must observe safe food handling practices.

Food Safety Standards

Third-party verification and certification to food safety standards is a wide and growing trend in the food industry. This means that for businesses to remain competitive they must increasingly adopt certified standards and be subjected to food safety audits on a regular basis to maintain this certification.

Whether audits are line-specific, product-specific or system wide, audits consume time and resources so there is great impetus to reduce the total number of audits a business is subjected to by reducing redundancy among global standards and variations in customer requirements.

The Consumer Goods Forum, an international body headed up by some of the world's largest retailers, created the Global Food Safety Initiative (GFSI) to address the issue of differences in standards on a global scale and reduce resultant audit inefficiency.



By 'benchmarking' specific food safety schemes against the GFSI guidance document, standards are identified that are very widely accepted for global trade requirements, providing a common ground for food businesses both those that need to comply with standards, and those that require their suppliers to be certified against them. While GFSI-recognized standards are certainly not the only ones out there,

becoming certified to a GFSI scheme increases a business's desirability to trading partners, and saves money by reducing the burden of multiple customer audits and variations in requirements. As the mission statement of the GFSI affirms, the goal is "Once Certified, Accepted Everywhere". Ideally, the fewer schemes the better – the more consolidated and all-encompassing the schemes become, the fewer differences will exist between individual customer requirements, and therefore fewer audits conducted. However, even as schemes become more alike, due to the nature of the food industry, there are still a few options to choose from. So, where do you begin?

Choosing a Food Safety Standard

Starting upstream and working downstream in the supply chain, the descriptions on the following pages provide information about each GFSI-recognized scheme to help orient you as you choose the one that's best. It's important to note that no two GFSI-recognized schemes are exactly alike, but there is a lot of overlap and continuity between them. All food safety standards cover these fundamental requirements in some form:

Key differences between the certification schemes involve where you are in the supply chain (primary producer, manufacturer, logistics/transport and so forth), your product sector (aquaculture, produce, meat, poultry etc.) and also the scope of your business (local versus international trade).

In addition to determining what you are missing, choosing a food safety standard often means building on strengths you already have. Rather than trying to build from the ground up, conduct an analysis of your existing systems and see how these schemes can augment what you already have in place.

Establishment

The Establishment generally denotes a dominant group or elite that holds power or authority in a nation or organization.

Cafeteria/Kiosks/Canteens/Cafes/Gourmet Food Shops/Restaurants/Hotels

A cafeteria is a type of food service location in which there is little or no waiting staff table service, whether a restaurant or within an institution such as a large office building or school; a school dining location is also referred to as a dining hall or canteen. A kiosk is a small, separated garden pavilion open on some or all sides. A canteen is a drinking water bottle designed to be used by hikers, campers, soldiers and workers in the field. It is usually fitted with a shoulder strap or means for fastening it to a belt, and may be covered with a cloth bag and padding to protect

the bottle and insulate the contents. Café is an establishment which primarily serves hot coffee, related coffee beverages (e.g., café latte, cappuccino, and espresso), tea, and other hot beverages. Some coffeehouses also serve cold beverages such as iced coffee and iced tea. Many cafés also serve some type of food, such as light snacks, muffins, or pastries.

Coffeehouses range from owner-operated small businesses to large multinational companies such as Starbucks. Gourmet is a cultural ideal associated with the culinary arts of fine food and drink, or haute cuisine, which is characterized by refined, even elaborate preparations and presentations of aesthetically balanced meals of several contrasting, often quite rich courses. A restaurant is a business which prepares and serves food and drinks to customers in exchange for money, either paid before the meal, after the meal, or with an open account. Meals are generally served and eaten on the premises, but many restaurants also offer take-out and food delivery services, and some only offer take-out and delivery. Restaurants vary greatly in appearance and offerings, including a wide variety of cuisines and service models ranging from inexpensive fast food restaurants and cafeterias to mid-priced family restaurants, to high-priced luxury establishments.

A hotel is an establishment that provides lodging paid on a short-term basis. Facilities provided may range from a basic bed and storage for clothing, to luxury features like enquire bathrooms. Larger hotels may provide additional guest facilities such as a swimming pool, business center, childcare, conference facilities and social function services.

Fast Food Outlets

Fast food is a type of food that is prepared and served very quickly. While any meal with low preparation time can be considered fast food, typically the term refers to food sold in a restaurant or store with preheated or precooked ingredients, and served to the customer in a packaged form for take-out/take-away. Fast food restaurants are traditionally distinguished by their ability to serve food via a drive-through. Outlets may be stands or kiosks, which may provide no shelter or seating, or fast food restaurants (also known as quick service restaurants). Franchise operations that are part of restaurant chains have standardized foodstuffs shipped to each restaurant from central locations.

Educational Institutions

An educational institution is a place where people of different ages gain an education, including preschools, childcare, elementary schools, and universities.

Health Establishments

Private Health Establishments collection is an annual survey which collects information about the activities, staffing and finances of all private hospitals

Mining Operations

Mine operations is the process of managing many immediate and long-term activities in and around a mine site in order to facilitate the production of a mineral product.

Keyword

Financial institutions, otherwise known as banking institutions, are corporations that provide services as intermediaries of financial markets.

Corrective Services/Final Institution

Corrective Services NSW (CSNSW) delivers professional correctional services and programs to reduce the risk of re-offending and enhance public safety.

As an important element of the criminal justice system, CSNSW manages offenders in custody and in the community. CSNSW works in partnership with other government and community agencies to ensure that inmates, offenders and their families are supported.

An establishment that focuses on dealing with financial transactions, such as investments, loans and deposits. Conventionally, financial institutions are composed of organizations such as banks, trust companies, insurance companies and investment dealers. Almost everyone has deal with a financial institution on a regular basis. Everything from depositing money to taking out loans and exchange currencies must be done through **financial institutions**.

Residential Catering

We offer three levels of residential catering service:

Full Service Catering

Our full service catering includes china, glass or silver plates; silverware; and linen napkins for your guests. Linens, chafing dishes, serving utensils and decorations are provided for buffet

tables. Full service catering requires a 10 person minimum, and The Classic provides full staff.

Set Up Service

Set up catering service includes china, glass, or silver plates; silverware; and linen napkins for your guests. Linens, chafing dishes, serving utensils and decorations are provided for buffet tables. Classic staff will arrive 1 hour prior to party time to set up, and will return after the party to pick everything up. Set up Service is not recommended for parties larger than 50 people.

“No Frills” Service

No Frills service is available for pick up or delivery. Your food will be securely packaged in disposable containers. Disposable plates, flatware and napkins are included, and disposable serving utensils are available upon request. “Keeper Chafers” are also available, for an extra charge.

In-flight Catering

An airline meal or in-flight meal is a meal served to passengers on board a commercial airliner. These meals are prepared by specialist airline catering services.

These meals vary widely in quality and quantity across different airline companies and classes of travel. They range from a simple snack or beverage in short-haul economy class to a seven-course gourmet meal in a first class long-haul flight. When ticket prices were regulated in the American domestic market, food was the primary means airlines differentiated themselves.

Transport Catering

There are different reasons for people to move out of their houses. With the increase in urbanization, industrialization and tourism, more and more people have learn to move out of their houses. We can categorize them into five different groups

- Tourism & Travel
- Education
- Employment
- Social obligation
- Medical ground

Kitchen Essentials and Basic Food Preparation

Considering the above groups, we can then break each of these into smaller units which give rise to volume feeding in some way or the other. The only thing that is common in all the above groups is that it requires feeding smaller or large groups of people ready to eat food in a short time.

Tourism & Travel

More and more people arriving in the country as tourists and even domestic tourism is on the increase, which result in people commuting from one place or one country to other and hence the need to feed.

Education

This group includes schools, institutions, colleges, and may be hostels. Here one has to fulfill the dietary needs of school going children or even college going youngsters.

Employment

Every individual in the course of his normal employment has to have at least one of his meals outside his home and as his place of work which give rise to industrial canteen, office canteen or mess, tiffin or lunch box provisions or even fast food or ready to eat meals in a short period of time.

Social Groups

This group mainly deals with the people who socialize and are regular out goers to either parties, functions, receptions, clubs, sports complexes or to hotels & restaurants with a view to meet and enjoy with people and to sometime dine out for a total meal experience.

Medical

This group includes

- Hospitals which needs dietary feeding to a large number of patients with different types of meals.
- Nursing homes which again require special diet and meals to be prepared in accordance to the patient's requirements

Events Catering

A party caterer provides all the elements necessary to have a successful social gathering— except for the venue. He traditionally prepares and serves food and drinks, creates an aura in accordance with the host's preferences and cleans up the location at the conclusion of the festivities. The caterer can provide his services in the client's home or at a specified location outside the residence.

A caterer is often self-employed and may have only one or two people helping him prepare and serve food and drinks. These helpers may be regular staff members or contract workers. Some caterers concentrate their efforts on food preparation and assign others to provide service.

Excellent culinary skills are normally mandatory to be a successful party caterer. Besides having exemplary cooking and baking skills, a flair for presentation is a common requirement for success in this career. Since it is widely believed that food must first be enjoyed by the eye before it can be appreciated by the palate, artistic staging often is of the essence?

Menu planning talents are generally required for a party caterer. One of his first jobs, often required before his client signs a contract for his services, is to present a menu tailored to the customer's needs. The guidelines he generally has to follow include budget considerations, whether the party will feature a sit-down meal or offer a buffet and if the food selection should be hot, cold or a combination of the two. Food allergies and preferences play major roles in menu selections. A tasting menu of food samples may be provided prior to the event to give the client a clear indication of what the chosen food will taste like.

Other factors for deliberation often include whether available beverages will include alcohol and, if so, if the selection will be limited to beer and wine or offer a full bar of alcohol and mixers. If a special event, such as an anniversary or birthday, is the focal point of the event, the inclusion of a special cake may be appropriate. Color schemes and themes are other topics ordinarily discussed by the caterer and his client.

Besides having clearly defined talents in food preparation, a party caterer is typically required to have excellent communication skills. He needs to understand his client's preferences, be able to negotiate contracts and have good public relations skills to promote his business. Being organized is necessary to plan and execute his services.

No formal education or training is required to be a caterer. Special classes in certain types of food preparation may be taken by a caterer to expand his talents

Kitchen Essentials and Basic Food Preparation

and offerings. Working as a food server or in a commercial kitchen environment provides good experience for an aspiring party caterer.

Private Catering

No event is too big or too small for us. We've successfully catered intimate sit down dinners for a family of ten to organizing a lavish cocktail party menu for 500 guests.

As Gold Licensed Caterers our team will expertly work with you to guarantee that all your requirements are met and budget is adhered to. We can also assist with staff, equipment hire and offer a great range of beverage packages.

We cater birthdays, weddings, engagements, christenings, housewarmings, baby showers, farewells, picnics and barbeques amongst other occasions.

Food Safety Hazards

A food safety hazard is anything present in food with the potential to harm the consumer, either by causing illness or injury. Food safety hazards can be biological, chemical, or a physical object. Good food safety practice must be science-based and a thorough understanding of hazards is the first essential step in their control

Biological hazards pose the greatest immediate food safety threat to the consumer. For example, the capacity of food-poisoning bacteria to cause large outbreaks of acute illness is an ever-present threat in the food supply chain. It is microorganisms and food-borne parasites that are of most concern as biological food safety hazards.

Bacteria

A number of bacterial species are food safety hazards. Some, such as Salmonella and Listeria monocytogenes, are familiar, whereas others are much less well understood. Campylobacter is an example of a less well known cause of food-borne illness. Few people have heard of this organism, yet it is now the cause of more reported cases of bacterial food poisoning in the developed world than any other agent, including Salmonella.

Viruses

Viral gastroenteritis is very common worldwide and there are a number of viruses that are capable of causing food-borne infections. The best known are noroviruses and hepatitis A, which have been responsible for serious food-borne disease outbreaks.

Parasites

A wide range of intestinal parasites can be transmitted to humans via contaminated foods. These organisms are much more prevalent in developing countries with poor sanitation, but the increasingly global nature of the food supply chain may increase their importance in the developed world.

Foods highly susceptible to microbiological contamination

The inner tissues of healthy plants and animals are free of microorganisms. They become contaminated when exposed to the microorganisms. The magnitude of this microorganism contamination depends upon various factors such as the microbial population of the environment from which the food was taken, the condition of the raw product, the method of handling the food and the conditions of storage.

Contamination of Plant Food Products

Fruits and Vegetables: Fruits and vegetables are generally contaminated by bacteria including species of *Bacillus*, *Enterobacter*, *Lactobacillus*, *Leuconostoc*, *Pseudomonas*, *Sarcina*, *Staphylococcus*, *Streptococcus* etc. Various molds and yeasts also inhabit the fruits and vegetables.

Contamination through infection: Fruits and vegetables are normally susceptible to bacterial, fungal and viral infections. These infections invade the fruit and vegetable tissue during various stages of their development and result in the subsequent spoilage.

Contamination through post-harvest handling: Usually, mechanical handling of fruits and vegetables during post-harvest period produces 'breaks' in them which invite microbial invasion. Since the pH of the fruits is relatively acidic (i.e. high in sugar), they are more susceptible to fungi in contrast to vegetables, which are more susceptible to bacteria because of their pH being slightly higher (5.0 to 7.0; less in sugar).

Keyword

Food additive, any of various chemical substances added to foods to produce specific desirable effects.

Chemical Hazards in Foods

Permitted Food Additives

Government regulations permit numerous chemical and biochemical substances to be added to foods at specified maximum levels. These substances are intended to impart some improved nutritional effect (e.g., vitamin fortification) or some specific technical function (e.g., preservative action, sensory attribute, stabilizing effect, etc.). Permissible food additives with their established levels for use can be found listed in government food regulations. In addition, the Codex Alimentarius contains specifications of permitted **food additives**.

Although food additives are permitted by government regulations, many can be harmful if they are present in the food at levels above the maximum established, and are therefore, potential chemical hazards. In some instances, a permitted food additive present below the maximum allowable level in a food can be a health hazard for specific segments of the population. For example, sodium bisulfite is a permitted food additive in some foods; however, individuals who are asthmatic could be at risk from foods containing sodium bisulfite. The labels on the containers containing the foods must clearly indicate the presence of the additives for the benefit of individuals who may be at risk from these additives.

Naturally Occurring Harmful Compounds

It is well known that many foods contain as their normal or inherent components naturally occurring substances that can be harmful if they are present in excess of certain levels; examples are oxalate in rhubarb, alkaloids in potatoes, toxins in mushrooms and in shellfish. In the U.S., the FDCA considers foods containing these naturally occurring substances to be adulterated only if the harmful substance is present in sufficient quantity that is likely to cause illness.

Unavoidable Contaminants

Some foods can contain naturally occurring harmful substances that are not normal or inherent components of the foods. These substances are considered unavoidable contaminants in the food and cannot be removed through processing or manufacturing practices; examples are aflatoxins from molds in peanuts and in some cereals. If the normal level of a naturally occurring harmful substance in a food is increased to an unsafe level as a result of mishandling of the food or by any other action, then the harmful substance can be considered as an added harmful substance.

Industrial Contaminants

Several harmful chemicals that enter the environment as a result of industrial activity have been shown to be present in foods. These substances include heavy metals (lead, mercury, arsenic), organ chlorinated compounds such as polychlorinated biphenyls (PCBs), and are considered as industrial or environmental contaminants. It considers PCBs as unavoidable environmental contaminants because of their widespread occurrence in the environment, and provides tolerances for PCB residues in several foods (e.g., milk, dairy products, poultry, eggs, etc.).

Chemical Residues

In food processing operations, some chemical compounds that are not permitted substances in food are used during certain operations and care must be taken to prevent unintentional contamination. These substances include chemical compounds used for cleaning and sanitizing food contact surfaces of processing, handling, and storage equipment, and for lubricating certain parts of food processing equipment.

Prohibited Chemicals

No chemical substance is permitted for use in a food unless it meets all of the requirements that are covered in the applicable food laws and regulations. In addition, in the U.S., some chemical substances are specifically prohibited from direct addition to food or from indirect addition to food through food contact surfaces.

Food Allergens

Certain foods are known to contain inherent components that cause serious immunological, allergic responses in a relatively small proportion of food consumers. These foods are entirely safe for most consumers who are not sensitive to the allergens. The following foods and some of their products are generally considered to be the most common food allergens: peanuts, soybeans, milk, eggs, fish, crustacea, tree nuts, and wheat. Some other foods (e.g., sesame seeds) are also known to cause allergenicity occasionally.

In addition, sulfites (including bisulfites and metabisulfites) used as ingredients in certain foods can produce nonimmunological allergic reactions in certain sensitive individuals.



Physical Hazards in Foods

Physical hazards include organic or inorganic substances, commonly referred to as foreign objects, foreign matter, or extraneous materials. Hard and sharp physical hazards are of particular concern. Depending on their size and dimensions, hard and sharp physical hazards can cause injury to the mouth or teeth, or can cause serious injuries if swallowed. In addition, some physical hazards, depending on their size, shape, and texture, have the potential to cause choking if swallowed. Physical hazards in foods can be particularly harmful to infants.

Certain hard and sharp foreign objects that are natural components of food (e.g., prune, date or olive pits; fish bones nutshells) are not considered physical hazards since it is expected that the consumer will be aware that these objects are natural components of the foods. However, if the food carries a label stating that the hard and sharp object has been removed(e.g., pitted prunes), the presence of the hard and sharp object in the food represents a hazard, since it is not expected by the consumer.

The common hazards considered as avoidable physical hazards in foods include broken glass, pieces of hard or soft plastic materials, stones, pieces of metal, pieces of wood.

Broken Glass

In a food plant, the common potential sources of broken glass include light bulbs, glass containers, and gauges with glass covers. Every effort must be taken to protect or eliminate these sources of broken glass, and to protect food from contamination with this hazard. In addition, many foods are packaged, distributed and sold in glass containers. For these foods, the glass packaging itself can be a source of broken glass.

Plastic

Both hard and soft plastic foreign objects are sometimes found in foods. In some food plants, some utensils and tools used for cleaning of equipment are made from hard plastic material; this type of plastic can become brittle from use over an extended period of time, and pieces can adulterate foods. The common sources of soft plastic foreign objects in food are plastic material used for packaging food and gloves used by employees who handle food.

Metal pieces

The most common sources of metal pieces in a food plant are food processing equipment, metallic cleaning tools, and equipment maintenance activities. In many food plants, magnets are used to eliminate some metals from foods, and metal detectors are used to detect the presence of metals in foods.

Wood pieces

The most common sources of wood pieces in a food plant are wood structures and wood pallets. The presence of these sources should be avoided whenever possible in food processing and production.

Stones

Many plant foods and particularly field crops such as peas and beans can contain small stones that become incorporated with the foods during harvesting. In addition, in food processing plants, a common source of stones is concrete structures, particularly concrete floors.

Food Safety Hazards and Health Risk

For a known food safety hazard, the extent of the harmful effects of the hazard on the health of the consumer is established by risk analysis and by hazard analysis. Risk analysis is usually conducted by a national food or health regulatory agency and addresses a public health concern regarding a particular food safety hazard associated with a sector of the food industry. A risk analysis is comprised of risk assessment, risk management, and risk communication. A primary objective of risk analysis is to establish a national food safety objective for a hazard in a food. The food safety objective for a hazard is the maximum frequency and concentration of a hazard in a food at the time of consumption that provides the appropriate level of protection from the hazard. The food safety objective can be considered as the maximum acceptable level for the hazard in a food.

At the level of production, processing, handling, or storage, a food company performs hazard analysis as part of the development of an HACCP plan for the food. Hazard analysis is the first of the seven HACCP principles, and is performed to determine the health risk associated with a hazard present in a food when it is produced, processed, handled, or stored, according to an established sequence of steps at a particular location. Once a food safety objective for a hazard has been established by risk analysis, it must be considered during the hazard analysis step of HACCP plan development.

Working in Temperatures that Promote the Rapid Growth of Micro-Organisms

Display of Food, Buffets

Buffet is a system of serving meals in which food is placed in a public area where the diners generally serve themselves. Buffets are offered at various places including hotels, restaurants and many social events. Buffet restaurants typically offer all-you-can-eat (AYCE) food for a set price. Buffets usually have some hot dishes, so the term cold buffet has been developed to describe formats lacking hot food. Hot or cold buffets usually involve dishware and utensils, but a finger buffet is an array of foods that are designed to be small and easily consumed by hand alone, such as cupcakes, slices of pizza, foods on cocktail sticks, etc.

The essential feature of the various buffet formats is that the diners can directly view the food and immediately select which dishes they wish to consume, and usually also can decide how much food they take. Buffets are effective for serving large numbers of people at once, and are often seen in institutional settings, such as business conventions or large parties.

Processes Where Food Required to be touched by Hand

The main reason for not touching ready-to-eat foods with bare hands is to prevent viruses and bacteria which are present in your body from contaminating the food. Viruses and bacteria are invisible to the naked eye, but may be present on your hands if you do not wash them thoroughly, particularly after using the bathroom. The law prohibits bare hand contact with ready-to-eat foods and requires good hand washing by food service workers,

Requirements for re-thermalization or Defrosting

The re-thermalization of foods and the ability to hold the re-thermalized foods for

periods of time and at temperatures where the foods are ready for consumption is old in the art. For example, if the foods are prepared in final consumption form prior to freezing or where the foods are ready for further processing, e.g. cooking, in a thawed state, large institutions, such as schools, hospitals and restaurants, use such re-thermalization. Time and labor can be saved if the frozen foods can be taken from a freezer and immediately re-thermalized without the necessity of subjecting the foods to a slow defrosting step, which could result in bacterial growth.

The low rate of heat transfer in conventional re-thermalizes, e.g. hot air ovens, and the limited capacity of microwave ovens make them undesirable for re-thermalization of frozen foods. However, as is known, the latent heat of vaporization makes steam a very effective heat transfer medium because of the large amount of thermal energy contained in the steam. As steam condenses on a food product, this thermal energy will be transferred directly to the food product. Steam is, thus, a much more effective heat transfer medium than hot air. However, because low-pressure steam is generated at a temperature of approximately 212°F, steam is generally too hot for direct contact with food products and, thus, can cause damage to some food products.

FOOD SAFETY PROGRAM FOR CATERING ENTERPRISE

Food handling is a crucial process in the food industry. Hygiene and food safety is of critical importance to a business due to the potential for problems if it is not carried out correctly and safely. There are many processes that contribute to contamination and all persons within the production cycle need to be aware of possible points of danger. In order to provide customers with safe food products, a food business must ensure that its processes are well-managed and safe.

Food safety programs, quality control procedures and management systems must be put in place. Coupled with appropriate training, these will help to direct staff so that they follow the correct procedures. Food safety programs increase in importance when a lot of preparation is carried out for large numbers of serves, e.g. cook-chill processes. If a small restaurant turns their food over regularly. The steps will be easier to control and the likelihood of poisoning large numbers of people is much smaller. Enterprises serving food to high risk customers, such as hospitals, child care centers and retirement villages, also need to have well controlled processes due to the nature of their business.

Critical Control Points

Critical control point (CCP) is the point where failure of standard operation procedure (SOP) could cause harm to customers and to the business, or even loss of the business itself. It is a point, step or procedure at which controls can be applied and a food

safety hazard can be prevented, eliminated or reduced to acceptable (critical) levels. The most common CCP is cooking, where food safety managers designate critical limits.

Receiving

The primary goal of receiving control is to ensure that deliveries received conform exactly to orders placed. In practice, this means that beverage deliveries must be compared with beverage orders in regard to quantity, quality, and price. The standards established for receiving are quite simple.

- The quantity of an item delivered must equal the quantity ordered. Verifying this normally requires examining bottles, to be sure they have been filled and sealed, and then simply counting bottles or cases. It can also involve weighing kegs of beer to confirm the standard of fill or examining containers to confirm that those received conform to the order.
- The quality of an item delivered must be the same as the quality ordered. For all spirits, wines, and beers, one would check to be certain that the brand delivered was the same as the brand ordered. For wines, verification may also require checking vintages or the bottling dates of wines that are best when young. For beers, it may require checking bottling or canning dates to ascertain freshness.
- The price on the invoice for each item delivered should be the same as the price quoted or listed when the order was placed.

Because the basic standards for the job are rather clear and simple, any honest individual of suitable intelligence and ability can be trained to receive beverages correctly.

Storing

Food logistics is both a traditional domestic skill and is important industrially. The transport and storing of food as well as timely delivery to consumers is important in order to secure the procurement of food. Food is stored by almost every human society and by many animals.

Storing of food has several main purposes:

- Storage of harvested and processed plant and animal food products for distribution to consumers
- Enabling a better balanced diet throughout the year
- Reducing kitchen waste by preserving unused or uneaten food for later use

- Preserving pantry food, such as spices or dry ingredients like rice and flour, for eventual use in cooking
- Preparedness for catastrophes, emergencies and periods of food scarcity or famine
- Religious reasons (Example: LDS Church leaders instruct church members to store food)
- Protection from animals or theft

Preparing

Food preparation preparing food for eating, generally requires selection, measurement and combination of ingredients in an ordered procedure so as to achieve desired results. Food preparation includes but is not limited to cooking.

Processing

Food processing is the transformation of raw ingredients, by physical or chemical means into food, or of food into other forms. Food processing combines raw food ingredients to produce marketable food products that can be easily prepared and served by the consumer. Food processing typically involves activities such as mincing and macerating, liquefaction, emulsification, and cooking (such as boiling, broiling, frying, or grilling); pickling, pasteurization, and many other kinds of preservation; and canning or other packaging. (Primary-processing such as dicing or slicing, freezing or drying when leading to secondary products are also included.

Displaying

All venues must be aware of the high-risk practice of self-service and display of food. If venues employ this practice, strict controls must be put in place to avoid contamination. Here are just a few of the risks involved with serving food in an open display.

Bacterial contamination:

- Food poisoning can occur if food is stored too long in the temperature danger zone of 5° to 60°
- Mixing new and old batches of food can also spread food poisoning bacteria
- Poor food-handling, such as not washing hands or wearing gloves before preparation
- Hot food that has not been cooked through and is then placed in hot holding units can cause food poisoning bacteria to multiply

Kitchen Essentials and Basic Food Preparation

- Storing hot food below 60° will also cause bacteria to multiply. Bain-maries and hot holding units are not designed to store hot food safely
- Overloading hot food holding units will cause some food to be heated at lower temperature, thus increasing the risk of bacterial contamination

Tips for displaying and serving food:

- Audit your food storage equipment and ensure that all equipment is functioning, and make adjustments where necessary
- Using separate display units and physical barriers between raw, cooked and ready to eat food, is a great way of preventing contamination
- Ensure all kitchen utensils and food preparation tools are sanitised and are not used across multiple food items
- Prevent packaged food from being damaged and exposed
- Dispose of any single-use items after they have been in contact with food
- Ensure that ingredients and pre-prepared food have not expired
- Serve reheated food as quickly as possible, or store it at 60°
- Provide accurate product information readily available for customers with allergies
- Prepare food with known allergens separately from other dishes, and train staff to handle enquiries about allergens

Packaging

Consumers' demands for healthy and safe products as well as a growing demand on the part of legislation and authorities have raised the importance of food safety significantly. At Henkel, we have addressed this trend and are constantly focusing our efforts to find the best adhesive solutions for the food packaging industry.

Servicing

- Hot food should be held at 140 °F (60 °C) or warmer.
- Cold food should be held at 40 °F (4.4 °C) or colder.
- When serving food at a buffet, keep food hot with chafing dishes, slow cookers, and warming trays. Keep food cold by nesting dishes in bowls of ice or use small serving trays and replace them often.
- Perishable food should not be left out more than 2 hours at room temperature—1 hour when the temperature is above 90 °F (32.2 °C).

Transporting

Foods are transported over long distances for several reasons: to feed densely populated areas that could not otherwise acquire enough food locally, to provide consumers with greater variety and to capitalize on the advantages of places in producing certain foods. Changes in the food processing and distribution industries provide another explanation for the longer distances over which foods are transported. In addition to extending food miles, these changes have direct consequences for smaller producers. Food distributors are the middlemen responsible for getting food from field to retail. They pick up food from producers or processors, temporarily store it in large (often refrigerated) warehouses and transport it to supermarkets, restaurants and other retailers where it is sold to consumers.

Standard Operational Policies and Procedures

An important aspect of any quality system is to work according to clear-cut Standard Operating Procedures (SOPs). An SOP is a policy and procedure document which describes the regular recurring activities appropriate to quality operations. If it is Critical to Quality (CTQ) then it is a candidate for a standard operating procedure. Consistency is the goal or purpose of an SOP, to carry out all operations correctly and always in the same manner.

Food Production Procedures

Food has been processed and packaged since the earliest days of man's history on earth. Meat and fish were salted, smoked and dried. Herbs were dried and stored for use as medicines. Alcoholic beverages were made from fruits and cereals.

The potato which originated in Peru, rice which came from Asia, and numerous fruits and vegetables are now grown away from their area of origin this together with consumer demand influenced by radio, advertising and television has led to a demand for non-traditional foods that are not appropriate to the local environment. They need special processing and packaging to protect them for their required storage life.



Kitchen Essentials and Basic Food Preparation

In the early days of traditional food processing the main aim was preservation to maintain a supply of wholesome, nutritious food during the year and in particular to preserve it for hungry periods, for example when hunting was poor. Food was seldom sold but traded and bartered.

While food processing still has the main objective of providing a safe nutritious diet in order to maintain health other aspects, particularly the generation of wealth for the producer and seller, have become increasingly important.

With the change from traditional to industrial food processing there has also been a change in the types of product processed. Traditional processors worked with foods that grew locally and the methods they developed were in harmony with the climate in which they lived. Only simple packaging using leaves, animal skins and pottery was possible and necessary to protect the food for its planned storage life. Nowadays non-traditional crops are grown all over the world.

Pest Control

The production and packaging of food products is a highly competitive industry that demands the most stringent standards of quality and hygiene. In this environment, fouling or contamination of food from even minor pest activity is totally unacceptable.

Our proactive pest control & reporting services are designed specifically for food manufacturers and food processing companies to ensure that pest activity will not have a negative impact on your standards or those of your customers and auditor

Cleaning and Sanitation Programs

An effective sanitation program is essential to the overall success of any food handling operation. Good sanitation will be rewarded with improved morale, better productivity and a reduced chance of regulatory incidences or recalls. These are reasons why it is important that every food handling establishment develop an effective sanitation program.

Equipment Maintenance

Foodservice Equipment Repair & Maintenance offers care and maintenance tips for foodservice equipment to help foodservice professionals extend the service life of equipment as well as guidelines for disposing and replacing units.

Maintenance of Personal Hygiene and Suitable Dress Standards

All employees shall wear clean outer clothing to prevent contamination of food equipment, utensils, linens, and single service and single-use. When moving from a raw food operation to a ready-to-eat food operation, employees must wear a cleanable outer covering (vinyl apron) over clothing. All employees must keep their fingernails trimmed, filed, and maintained so that the edges and surfaces are cleanable. While preparing food, employees must not wear jewelry on their hands or arms.

This does not apply to a plain wedding band. Employees must wear hair restraints such as hair bonnets, baseball hats, or hair nets, and clothing that covers body hair to effectively keep hair from contacting exposed food, clean equipment, utensils, and linens. This will not apply to employees who serve beverages or packaged foods.

Contingency Plans

A contingency plan is a plan devised for an outcome other than in the usual (expected) plan. It is often used for risk management when an exceptional risk that, though unlikely, would have catastrophic consequences. Contingency plans are often devised by governments or businesses.

Food Poisoning

When one eats food that contains agents not meant for consumption, the result is often food poisoning. It ranges from mild illness, which ceases on its own, to severe and life-threatening illness, depending upon the cause. One can get this condition from eating foods that are poisonous if improperly prepared, food that is prepared by someone with a highly contagious virus, or food contaminated with numerous types of bacteria. Some people may even contract food poisoning from eating foods that contain a high amount of pesticides, or parasites. In many cases, the poisoning can be prevented by appropriate hand washing and safe preparation of food.

Customer Complaints

The customer is complaining about everything that did not go the way they expected. Customer complaints can be unjustifiable, but we recommend that you check what occurred. It is preferable that you put yourself in customer's shoes in order to understand their complaints better since your perceptions are not the same.

Rejected Food

The restaurant offers meals made from vegetables and fruit rejected by the food industry because of sell-by dates and over-buying.

Equipment Breakdown

If your fridge or display equipment breaks down, use other equipment, or move the food to a cold area. If you cannot do this, or you do not know how long the equipment has been broken down, contact your local Environmental Health Officer. If you have frequent problems with your chilling equipment, consider whether it is suitable for your business. Generally, commercial equipment will be more suitable for catering.

Faulty Equipment

Faulty equipment is any type of mechanical or electronic equipment that is dangerous or unsafe to use. This usually refers to equipment used in the workforce for producing or manufacturing products.

Existence of Pests and Vermin

Rats, mice, flies, mosquitoes are a common nuisance that may also be of public health concern, as they are capable of carrying disease and contaminating food. As a city of Onkaparinga resident, you are responsible for ensuring that pests on your property do not become a problem and are eradicated if an infestation occurs. Our role in pest and vermin control is to provide advice and support for best practice in reducing pests around your home.

Implement the Food Safety Plan

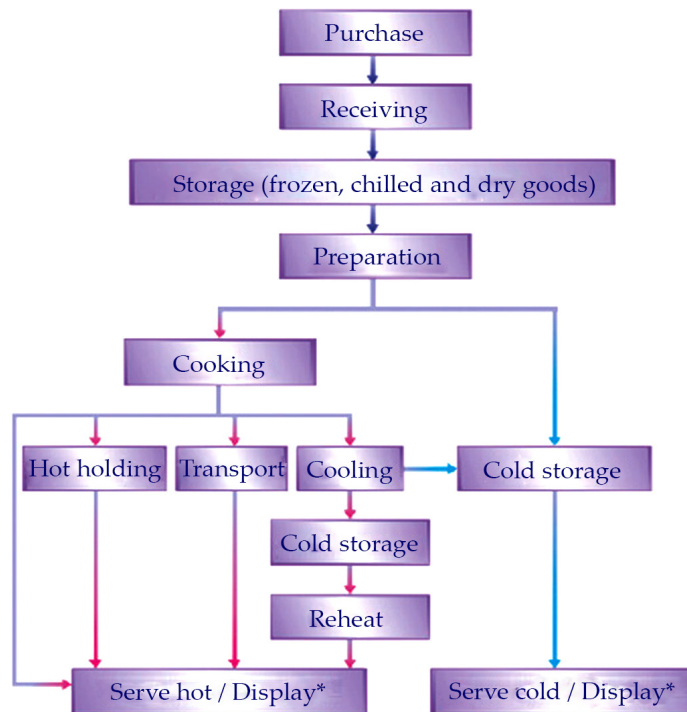
Preliminary planning and preparation will be essential before developing your FSP. A coordinator for developing an FSP should be appointed and adequate authorities and resources should also be provided. The coordinator must have basic knowledge of food safety and must be familiar with the properties of food as well as its processing procedures. Staff should be made aware of the changes and benefits that will result from the introduction of the FSP.

The FSP will only work if each staff member knows their role in the plan, and is committed to making it work. To reduce the anxiety of staff, the FSP should be introduced in phases over a period of time. For example, the FSP could be introduced initially for just the first step of the catering operation (i.e. purchase of raw materials),

making sure that the first step is working properly before moving onto the next step.

Draw a Flow Diagram

A flow diagram should be drawn showing each step in the operation, from purchase of raw materials to serving food to consumers. The flow diagram shown here is a generic example for a catering operation which should be tailored to each individual operation. Each of the steps of the operation can be considered a control point to prevent food safety problems.



HACCP PREREQUISITE PROGRAM PREMISES AND FACILITIES

This prerequisite program addresses the requirements for the location, design, construction, and maintenance of buildings that are used for food processing. It covers the grounds, all exterior and interior structures of buildings, and all facilities and essential services required in food processing establishments. Many sections of this prerequisite program need to be considered during the design and construction stages of a food plant. Engineering, design, and construction requirements and guidelines for food plants have been developed by some government agencies.

Kitchen Essentials and Basic Food Preparation

The general conditions in a food plant, including the state of repairs, maintenance, and cleanliness of all structures and facilities, are critical in order to achieve the sanitary requirements for food processing. The primary considerations are that the building, its grounds, structures, and facilities are not a source of contamination or cross-contamination of food, there is protection from entry of pests into the building, and clean and sanitary conditions can be maintained.

Location

The buildings in which food is processed or stored should not be located in close proximity to sites that are sources of environmental pollutants, pest infestations, smoke or dust, to areas that accumulate wastes or stagnant water, or have industrial, agricultural or other activities which are potential sources of food contamination. If any of these undesirable conditions exist, there should be adequate safeguard to protect against any potential contamination or pest infestation.

Grounds

The grounds of buildings in which food is processed or stored should be adequately sloped and drained to prevent stagnant water, be free of waste and debris, be controlled for dust, and be adequately maintained to protect against becoming a source of contamination or pest infestation. In order to protect from pests, maintenance of the grounds should address grass and lawns, hedges, shrubs, trees, receptacles for storage of garbage, and any structures located on the grounds. In particular, the perimeter of the building exterior should be well maintained to prevent breeding or attraction of pests.

Building Exterior

The design, construction and maintenance of exterior walls and roofs of buildings, should prevent the entry of sources of contamination and pests, and leakage of water into the building. Exterior walls should be free of cracks that could be breeding sites for pests. Openings for exhaust fans and air intake ducts, and exterior drainpipes should be adequately screened and protected to prevent entry of pests. The loading and unloading areas of the building, and all exterior doors and windows should be adequately protected to prevent entry of pests. The location of exterior lighting should not attract insects into the building.

Building Interior

Design and Layout: The design and layout of the building interior and the location of

all structures, equipment, services, and facilities should permit movement of personnel and equipment, flow of air, materials and products, movement of waste and garbage, and storage of materials and products, in a manner that prevents contamination and cross-contamination of materials and products. There should be designated areas for processing, for packaging, for raw materials storage and preparation, and for finished product storage. Processing activities that are potential sources of cross-contamination should be located in areas that are separated from other processing activities. The layout of the building should provide adequate workspace for plant employees to perform their tasks satisfactorily, and adequate space for cleaning of all structures. The location of equipment should be such that it is accessible for regular cleaning and maintenance.

Structures: The design and construction of all building structures such as floors, walls, ceilings, overhead structures, windows, doors, and stairs, and all utilities and service structures such as ducts, pipes and drains should meet all requirements for construction of food plants. The materials used for construction and finishing of these structures should not be sources of contamination and should be durable, impervious, smooth and easily cleaned and maintained. The materials used for construction of walls and floors should withstand the routine plant operating conditions and the routine cleaning and sanitizing conditions.

Glass: Glass or glass-like materials such as breakable plastic in food plants can be sources of physical hazards and should not be used in processing areas where there is a likelihood of breakage that will result in contamination of product. If these materials must be used, they must be adequately protected from breakage. Overhead light bulbs should be protected from breakage if they are a potential source of contamination. The control of glass and glass-like materials in a food plant should be addressed in a glass policy that should cover instructions for dealing with breakage of glass, and the control of glass and glass-like materials in items such as clocks, lights, gauges, containers and glassware.

Corners and joints: Corners and joints in all structures should be designed to prevent accumulation of contaminants and to facilitate cleaning; they should be free of cracks and openings. The junctions between walls and floors should be designed to facilitate cleaning. Joints on walls, floors, and ceilings should be sealed and should be easily cleaned.

Floors: The surface of floors should be even, but with the appropriate slope for waste-water and other liquids to be drained at the designated outlets. Floor surfaces should be impervious, durable and free of cracks to facilitate cleaning.

Windows and Doors: Windows on exterior walls should be sealed or fitted with screens to prevent entry of pests. Exterior doors should be self-closing, should always be kept closed, and should be without gaps or openings when closed, to prevent

entry of pests. Exterior doors should be kept closed to prevent unauthorized access into the building.

Lighting: The building interior should be equipped with adequate light and lighting facilities to permit employees to carry out their designated tasks in areas where processing, handling, storage, test-ing, inspection and cleaning activities take place. Adequate lighting should also be provided in hand-washing areas, change-rooms, locker rooms and toilet rooms.

Ventilation: There should be adequate ventilation and air exchange throughout the building to prevent airborne contamination, condensation on any structure or equipment, and accumulation of dust. High humidity should be avoided to prevent mold growth and some types of insects. The direction of air-flow should not result in contamination or cross-contamination of foods. In addition, fans and other air-blowing equipment should be operated in a manner that does not result in contamination. Air filters and dust collectors should be cleaned, maintained and replaced so that they are effective and do not become sources of contamination.

Drainage and sewage systems: The drainage and sewage systems should be designed to prevent cross-connection of sewage with other wastes from the plant in order to avoid any potential for contamination. Drains should be adequately sloped to ensure there is no accumulation of wastewater or other liquids. The location of drains and drain traps should permit ready access for cleaning. The design and maintenance of the drainage system should prevent backflow of wastewater into the building.

Pipes and hoses: Water pipes should be free of condensation. Insulated pipes should be well maintained and should be free of condensation drips and mold growth. Water taps, faucets, and hose connections should be free of leaks and water drips. Hose reels should be pro-vided for storage of water hoses when not in use.

Access to Premises

The entrances and exits of a food plant should be controlled to prevent access by unauthorized personnel. Exterior doors should not open from the outside of the building. Food plant employees should use only the designated entrances and exits. Receiving and shipping locations should not be used by employees as entrances or exits. Access of visitors into food plants should be controlled.

Employee Facilities

Hand-washing: There should be accessible hand-washing stations at the appropriate locations, with potable running water at a suitable temperature, soap or other hand-cleaning and sanitizing materials, sanitary hand-drying equipment or supplies for

employees to wash and dry hands as required. The water control devices at the hand-washing stations should be designed to protect against recontamination of washed hands. If disposable towel is used for hand-drying, a covered garbage receptacle should be provided for used towels. There should be easily understandable signs posted at hand-washing stations to remind employees to wash hands.

Washrooms and Toilet Rooms: Washrooms and toilet rooms in particular, should be separated from and should not open directly into food storage, handling and processing areas. Washrooms should be equipped with the required hand-washing facilities, covered garbage receptacles, and easily understandable signs to serve as reminders to employees.

Change-rooms: Change-rooms should be available for employees to change from their personal external clothing into designated work uniform and footwear. Change-rooms should be equipped with lock-ers or suitable storage racks for employees to store clothing, footwear and other personal items, with receptacles for dirty work clothes, and covered garbage receptacles. The design and location of lockers and storage racks in change-rooms should facilitate cleaning.

Lunchrooms and break-rooms: There should be designated lunchrooms and break-rooms for employees. Lunchrooms should be equipped with appropriate appliances and food storage facilities for employees' food and with covered garbage receptacles. If smoking is permitted in lunchrooms and break-rooms, it should be restricted to designated areas and ashtrays should be provided.

Cleaning and Sanitizing Facilities

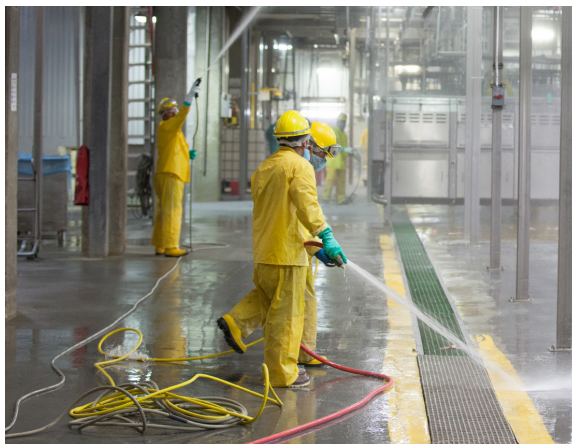
Potable running water at the required temperatures and pressures should be available for all cleaning and sanitizing activities. The required equipment and tools for cleaning and sanitizing should be available.

REMEMBER

Equipment and tools used for cleaning of food-contact surfaces, food processing equipment and utensils should be appropriately identified and stored so that they are separate from those used for cleaning of building structures such as floors and walls. There should be designated areas for cleaning of cleaning equipment and tools and for their storage when they are not in use.

Keyword

Chemical agent is a chemical compound that has toxic effects on human health. Within this definition, the term includes dusts, mixtures, and even common materials such as paints, fuels, and solvents.



Storage Facilities

There should be adequate and appropriate facilities such as warehouse, storage rooms, silos, tanks, vats, bins, or other containers, for the storage of raw materials, ingredients, packaging materials, products to be reworked or recycled, semi-finished products, finished products, cleaning materials and nonfood chemicals. These storage facilities should be designed to ensure that there is no contamination, cross-contamination, or pest infestation of raw materials, ingredients, packaging materials, and semi-finished and finished products during storage. There should be separate storage facilities to segregate food materials from nonfood chemicals.

There should also be appropriate storage facilities for idle food processing equipment and for tools, materials, and spare parts used for repair and maintenance of equipment.

Waste Collection and Storage Facilities

There should be designated containers with covers, if necessary, for collection of waste and garbage and for their temporary storage until disposal. These containers should be properly identified, and be made of durable, impervious material and maintained in a sanitary condition. There should be no leakage from waste containers. Waste collection containers located on the grounds outside of the building should be maintained so that they are not sources of contamination or pest infestation.

HACCP Prerequisite Program Sanitation and Cleaning

This prerequisite program covers all ongoing and periodic activities and operations that are directed at maintaining the environment, facilities, structures, and equipment in a food plant under sanitary conditions at all times. The design, construction, and layout considerations that relate to sanitation and cleaning are covered in the prerequisite program *Premises and Facilities*. It is quite common for the term sanitation alone to include house-keeping, cleaning and sanitizing; however, the distinction should be made between cleaning and sanitizing. In general, cleaning activities cover the removal of dust, dirt, debris, accumulated raw materials, ingredients or product, and any chemical residues, from utensils, food processing equipment, and structures. Sanitizing activities cover the use of a **chemical agent** or a specific technique to kill microorganisms present on equipment, utensils and structures.

The maintenance of sanitary conditions in a food plant, including clean and sanitary environment, structures, facilities, and equipment is essential to ensure that food is produced under sanitary conditions, to prevent contamination from these sources and to prevent breeding of pests. Food processing operations in a food plant should only commence after all the required cleaning and sanitizing activities have been completed. In this prerequisite program, the primary considerations are the activities for maintaining sanitary conditions by means of a sanitation program, and ongoing monitoring of the sanitary conditions during all operations at a food plant.

Sanitation and Cleaning Program

There should be a written program for cleaning and sanitizing of the structures, facilities, and equipment in a food plant. This written program should identify each structure, facility, and equipment to be cleaned and sanitized. For each of these, the program should include detailed cleaning and sanitizing procedures, the cleaning and sanitizing chemicals to be used and their concentrations or dilutions, removal of residues of cleaning and sanitizing chemicals, the cleaning tools to be used, the frequency of cleaning and sanitizing, and the personnel responsible for cleaning specific equipment or structures. Each aspect of the cleaning and sanitation program should be monitored to ensure that the program is followed. There should be some verification to determine the effectiveness of the program. Sanitation records should be kept for the activities that are required, including the monitoring and verification of the sanitation program.

Equipment Cleaning and Sanitizing

There should be a program for cleaning of all equipment, including all food processing

Kitchen Essentials and Basic Food Preparation

and food handling equipment, as well as food storage equipment such as storage tanks, refrigerators, and freezers. For each type of equipment there should be a schedule for cleaning and sanitizing, along with any specific cleaning instructions.

Cleaned-in-Place (CIP) Equipment: In some food processing operations, certain equipment cannot be easily disassembled for cleaning between successive production runs, although this equipment should be cleaned at the end of each use. These types of equipment are considered CIP equipment. There should be written procedures for cleaning and sanitizing of each type of CIP equipment.

Cleaned-out-of-Place (COP) Equipment: Certain food processing equipment should be disassembled for cleaning after each use or periodically, these are considered COP equipment. There should be instructions for disassembly and reassembly of COP equipment, in addition to instructions for their cleaning and sanitizing.

Utensils and food contact services: All utensils used for handling food, including all containers, trays, pans and dollies, and all food contact surfaces should be cleaned and sanitized as it becomes necessary. These should be protected from contamination if they are stored after cleaning.

Master Cleaning Schedule

Daily housekeeping: A program of daily cleaning should be in place to ensure that equipment and work areas are maintained in a clean state during routine daily operations so as to prevent contamination of products. This may require that equipment, utensils, food contact services, work area and floors be cleaned periodically during daily operations. Cleanup of leaks and spills of all types of materials and products should be done as soon as possible, or immediately if they are potential sources of contamination or pest infestation. There should be monitoring and verification of this daily housekeeping program.

Establishment cleaning: In addition to the daily housekeeping, a comprehensive program should be in place to ensure that every aspect of the establishment is subject to periodic cleaning to eliminate the potential for contamination. This program should cover all facility structures, including lunch rooms, appliances, vending machines, break-rooms, change-rooms, and toilet rooms, ceilings and overhead structures such as pipes and ducts, walls and floors of all structures, windows and doors, and all equipment. The frequency and type of cleaning should be specified for each facility or structure. There should be monitoring and verification of this cleaning program for the establishment.

Cleaning and Sanitizing Chemicals

All chemical compounds used for cleaning and sanitizing should be approved as safe for use in food establishments, and on food-contact surfaces in particular, by an appropriate government regulatory agency. The manufacturer's guidelines and directions for use of these chemicals must be followed to ensure the effectiveness of the cleaning and sanitizing, and to remove or prevent potential contamination. The chemicals themselves must not be a source of contamination. All packages and containers, including intermediate containers with chemical compounds used for cleaning and sanitizing, must be clearly identified by labeling, and must be stored separately from food materials and products.

Cleaning Tools and Equipment

All tools and equipment (e.g., brushes, dustpans, brooms, mops, trays, carts) used for cleaning should also be subjected to appropriate cleaning and storage. Broken or damaged tools should not be used. Tools used for cleaning food processing, storage and handling equipment should not be used for other cleaning, should not be stored on the floor, and should be identified and stored separately from tools used for other cleaning. In addition, tools used for cleaning of toilets and toilet rooms should be identified and not be used for cleaning of food processing, handling and storage areas.

Cleaning Area

There should be designated location and facility for cleaning of cleaning tools and equipment. This area or facility, as well as all sinks and washbasins and surrounding areas, should be kept clean and sanitary. Wash-water should be removed and drained immediately to prevent the potential for contamination.

Cleaning and Sanitizing Personnel

Personnel who are assigned cleaning and sanitizing tasks should be trained in the safe use of the cleaning and sanitizing chemicals and the proper handling, identification and storage of these chemicals. They should be provided with the directions for use, including the appropriate usage concentration or dilution for food-contact surfaces, and instructions for removal of residues of these chemicals from these surfaces.

Effectiveness of Cleaning and Sanitizing

The effectiveness of the cleaning and sanitizing activities for removal of contamination should be verified. This should be done by microbiological swab tests, by visual

inspection of cleaned equipment and areas, and by observing employees who carry out the cleaning and sanitizing activities. There should be no unacceptable residues of cleaning and sanitizing chemicals on food-contact surfaces.

Sanitation and Cleaning Records

As part of the establishment's cleaning and sanitation program, records should be kept as evidence that the activities in the program are performed according to the required instructions and frequency, and that the program is monitored routinely and verified for its effectiveness.

HACCP Prerequisite Program Equipment

DID YOU KNOW



From the period through at least the beginning of the 18th Century, attitudes toward drinking were characterized by a continued recognition of the positive nature of moderate consumption and an increased concern over the negative effects of drunkenness.

This prerequisite program covers activities directed at design, construction, installation, performance, maintenance, and use of equipment in a food plant. It also includes the calibration of equipment used for monitoring and measuring parameters at any point in a process of detection, elimination, control, or prevention of food safety hazards, and for measuring product characteristics that are indicators of the safety of a product. The cleaning and sanitation of equipment is covered under the prerequisite program *Sanitation and cleaning*. Equipment used for storage of materials and products is covered under the prerequisite program Transportation, receiving, storage, and shipping. The particular types of equipment that are used in a food plant depend on the specific type of products that are processed. The performance of equipment should ensure that the safety or quality specifications of a food can be achieved. In this prerequisite program, the primary considerations are to ensure that the equipment are capable of processing products that meet the safety and quality requirements, while at the same time the equipment must not be a source of contamination of the product.

Processing Equipment

Design and construction: All equipment should be suitably designed and constructed to ensure that the specific requirements of the process can be achieved and the required maintenance,

inspection, and cleaning can be readily undertaken. In addition, during the operation and use of equipment, there should be no contamination of product from the equipment itself, and there should be no unacceptable accumulation of any material (e.g., dust, metal fragments, oil, water, product) that is likely to be a source of contamination. In some food processing operations, a government regulatory agency specifies the design and construction requirements of the equipment that are used.

Food-contact surfaces: The food-contact surfaces of equipment should be made of nontoxic material and should not be corroded or damaged in any way during normal operations, or when in contact with raw materials, products, and cleaning materials. The seams on food con-tact surfaces should be smooth so as to prevent accumulation of product and to facilitate cleaning and sanitizing.

Installation: All processing equipment should be installed in a manner that will facilitate its operation, and the cleaning and maintenance of both the equipment and its immediate surroundings. After any equipment has been installed, it should be inspected and approved for use before it is put into regular operation. This inspection and approval should confirm that the equipment is capable of performing the intended operation and that the equipment is not a source of contamination.

Maintenance program: In addition to the equipment cleaning and sanitizing that are covered in the prerequisite program *Sanitation and Cleaning*, there should be an equipment maintenance program to ensure that the equipment is always operating as is intended, is meeting the requirements of the process, and is not a source of contamination. This program should cover (a) the routine maintenance such as cleaning, inspection, servicing and lubrication, (b) repairs and unscheduled maintenance resulting from equipment break-down during regular operations and scheduled and planned preventive maintenance based on the equipment manufacturer's guidelines or on the conditions and period of operations. If any equipment has been disassembled during repair or maintenance, it should be inspected and approved before it is returned to regular use. Lubricants used for maintenance of food processing equipment should be food grade and approved for use by the appropriate government

REMEMBER

Quality of even raw food stuff besides processed foods is of public health concern and must be addressed.

Kitchen Essentials and Basic Food Preparation

regulatory agency. Excess lubricant from servicing of equipment or lubricant that accumulates during operation of any equipment should be removed and prevented from coming into contact with food.

Maintenance personnel: Personnel who carry out equipment maintenance activities should be aware of the practices to be followed to ensure that contamination of product does not occur as a result of equipment maintenance.

Handling Equipment

Equipment such as forklifts and hand-jacks that are used to handle and move pallets with bags, cartons, or containers with materials and products at a food plant, should be maintained so as to prevent damage to or contamination of foods.

Storage Equipment

All storage equipment should be maintained to ensure that the materials and products are stored under the appropriate conditions to prevent deterioration or contamination of foods. This is particularly applicable to equipment that store foods at controlled temperatures (e.g., freezers, refrigerators, storage tanks).

Monitoring and Measuring Equipment

Calibration: There should be a calibration program for equipment that is used for monitoring and measurement of safety- and quality-related characteristics of raw materials, ingredients, and products, and of processing parameters. The calibration program should include the identification of all equipment that is in the program, the schedule for calibrating the equipment, the person responsible for calibration, and the procedures to be followed for performing the calibration. Calibration records should be kept for the equipment that is included in the program. The calibration program should also include control of all reference standards including chemical reagents that are used for calibrating equipment.

Monitoring equipment: All monitoring equipment including devices for detecting the presence of metal fragments and sensors for examination of the integrity of can seams and package seals should be calibrated

Measuring equipment: All measuring equipment should be calibrated. This includes devices for measuring temperature of thermal processes such as cooking, sterilization, and pasteurization, temperature of cold storage rooms such as coolers and freezers, equipment for measuring quantities of ingredients which act as preservatives and equipment for measuring safety, and quality-related product characteristics such as pH, water activity, viscosity, color, and net weight.

SUMMARY

- Food is a major determinant of health, nutritional status and productivity of the population. It is, therefore, essential that the food we consume is wholesome and safe.
- Food safety provides an assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.
- Protection will only occur if all sectors in the chain operate in an integrated way, and food control systems address all stages of this chain.
- Codex has embarked on a series of activities based on risk assessment to address microbiological hazards in foods, an area previously unattended.
- The HACCP-based programs do not address some of the quality aspects of food laws and regulations.
- The goal of a food company's quality control program is to ensure that all requirements are fulfilled so that only safe foods of acceptable quality are sent to its customers or to consumers.
- Unsafe or stale foods also deteriorate and be of poor quality, which means they lose nutrients and so we do not get enough of what we need for a healthy diet.

MULTIPLE CHOICE QUESTIONS

1. **Which of the following is untrue about grilling meat?**
 - a. The advantage of this process is that it reduces the saturated fat in the meat
 - b. It produces Hetero cyclic amines which are carcinogenic
 - c. It produces poly cyclic aromatic hydrocarbons which are carcinogenic
 - d. None of the mentioned
2. **Poly cyclic Aromatic Hydrocarbons are formed when the meat is exposed to very high temperatures.**
 - a. True
 - b. False
3. **Which information is incorrect when it comes to dehydration affecting vitamins?**
 - a. Beta-carotene and B-vitamin do not get affected
 - b. Vitamin C does not get affected
 - c. Vitamin C is retained during pickling of vegetables
 - d. None of the mentioned
4. **Which of the following is untrue?**
 - a. Many Vitamin Bs like Vitamin B6 are affected by heating
 - b. Vitamin C is lost in almost all food processing steps
 - c. Vitamin C degradation decreases by enzymes and also metals like Cu and Fe
 - d. Vitamin A is stable in absence of oxygen
5. **Alisha challenged her friends that one special vitamin would not be affected when she boils milk. Which vitamin is it?**
 - a. Vitamin C
 - b. Vitamin D
 - c. Vitamin B
 - d. None of the mentioned
6. **Food that provides nutrients that may otherwise not be consumed in sufficient quantities is called**
 - a. Food enrichment
 - b. Food Fortification
 - c. Food Substitution
 - d. Food supplementation

7. What is the “danger zone” range of temperature in food handling?
- 50 - 100 deg F
 - 80 - 120 deg F
 - 40 - 140 deg F
 - 100 - 212 deg F

REVIEW QUESTIONS

- What are the global considerations for food quality and food safety?
- Which types of responsibility require for food quality and food safety?
- Write the enforcement of food laws and regulations.
- How to evaluate food safety hazards?
- Give an overview on critical control points.

Answer to Multiple Choice Questions

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (d) | 2. (b) | 3. (b) | 4. (c) | 5. (b) |
| 6. (d) | 7. (c) | | | |

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CHAPTER 8

BASIC FOOD PREPARATION: MEATS, POULTRY, AND FISH

"If God did not intend for us to eat animals, then why did he make them out of meat?"

—John Cleese

INTRODUCTION

Meat, poultry and fish can be canned, frozen or dried at home. These home prepared products are tasty and safe when processed right. However, because meat, poultry and fish are low-acid foods that easily spoil special care is needed for preservation. The following research-based resources will help you preserve meat, poultry and fish safely.

All edible meat from beef, veal, pork, and lamb is made up of muscles composed of bundles of lean microscopic fibers held together and surrounded by connective tissue. How much connective tissue is present is related to how tender a cut of meat is and to how many tender cuts can be obtained from a single meat animal. Muscles from the neck, leg, shoulder, and joints are less tender because of

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Define Meat
2. How to cook meat
3. How to grill meat
4. Explain Fish
5. How to cook fish
6. Elaborate Poultry
7. How to roast a chicken
8. How to cook chicken

dense connective tissue. The rib and loin areas are known a tender arm; they have very little connective tissue. Surrounding each muscle is an outer costing of protective fat. The two basic methods of cooking meat are by dry heat and by moist hat. The method to be used depends on the kind and cut of the meat. Dry-heat methods are generally used to cook meats that have comparatively little connective tissue, and that will readily become tender by cooking. Moistheat methods are required for cooking meats that have more connective tissue and that are tenderized by long, slow cooking. In general, poultry is cooked by the same method used for cooking meat. The older, tougher birds are best when cooked by moist heat, but the younger birds are more juicy when cooked by dry heat. Finfish and shellfish are tender and can be prepared by a variety of cooking methods. Gravy, often an important part of the meat course, usually accompanies roasts, braised meats, poultry, and some pan-fried meats. Good gravy should have the distinctive flavor of the main dish with which it is served. There are a few meat dishes such as meat loaf which yield little or no juices for making gravy. For these dishes, sauces are substituted for gravy. Many delicate sauces blend well with finfish and shellfish.

Meat is cooked to destroy any pathogenic organisms present and to make it more tender and more palatable. Some basic facts pertaining to the preparation of beef, veal, pork, and lamb are listed below.

The following information should help in controlling the quality of cooked meats:

- Fat acts as an insulator. Under 325° F. oven heat, fat is the first part to break down and melt. This gives a self basting effect to the roast, making it more juicy and tasteful as the fat covering contains most of the taste and flavor.
- Heavy rims of fat on meat that is to be broiled or fried should be cut off. Removing the fat prevents curling and allows the meat to cook uniformly and to brown evenly.
- A flat roast cooks in less time than a chunky one of the same weight, because the distance from the outside to the center of the flat roast is less and the heat penetrates more quickly.
- The minerals in meat are not destroyed in cooking; the method of preparation affects the mineral value of meat only if drip losses are excessive or if the cooking water is discarded.
- The yield of calcium from bones may be increased if tomatoes or other acids are added to the meat while it is simmering.
- The amount of fat on meat may alter the cooking time. Melted fat readily conducts heat, which results in faster cooking; therefore, a rack should be used for roasting to prevent frying in the fat.

- Meat should be placed in the roasting pan with the fat side up. As the fat melts, it bastes the meat and keeps it from drying out.
- A roast should be removed from the oven before it reaches the desired temperature because the meat will have an internal temperature increase of 5-8 degrees after removal from the oven. The roast should set approximately 20 minutes before carving.

Slicing Meats

Meats should be sliced across the grain; cross-grain slicing shortens the meat fibers and gives neat slices. A general rule to follow is to slice parallel to the cut surface, because meats used for roasts are usually cut across the grain at the meat process plant. The following information should help to obtain eye-appealing slices of meat:

- A slicing machine set at the proper cycle can do a fast carving job; the grain of the meat must be considered to obtain whole, even slices.
- Several boneless roasts or hams can be sliced at the same time on a slicing machine if they are properly placed on the carriage.
- Strings and skewers should be removed from roasts or hams before machine slicing.
- Once one slice of meat is cut satisfactorily, it is usually unnecessary to alter the cutting angle for the remaining slices. However, because the grain of corned beef (brisket) runs through the meat in many directions, it is necessary to turn this meat while slicing it to insure cutting across the grain.
- Meats carve more easily if allowed a cooling-off period after cooking.

Characteristics of Beef

Beef is the flesh of steers, heifers, cows, and bulls; it is composed of muscle fibers, connective tissue, and fatty tissue. Connective tissue is of two types, collagen and elastin. In the presence of water, collagen is converted to gelatin. Cooking does not alter the structure or the physical properties of elastin fibers. The relative tenderness of beef depends in part upon the kind, amount, and distribution of connective tissue. Cuts of beef which are high in connective tissue are cooked by moist-heat methods. The amount and disposition of fat in beef depend upon a number of factors such as the species, breed, age, sex, inheritance, and degree of finish of the animal. Fat is found in the connective tissue between the fiber and muscle bundles, and within and between the muscle cells. The disposition of fat, known as marbling, increases the nutritive value of meat, enhances the palatability by helping to retain the meat juices, adds to the flavor of the lean, and tends to keep the beef moist during cooking. The quality of the cooked beef is largely determined by such palatability factors as

tenderness, flavor, aroma, juiciness, color, and cooking methods. Tenderness, like fat, is dependent upon the factors of breed, sex, age, inheritance, and degree of finish as well as the kind of feed, system of feeding, and connective-tissue content. Beef cattle usually yield a higher percentage and higher quality of edible meat than do dairy cattle. Grading takes into consideration the age and the sex differences of the animals; the U.S. Department of Agriculture provides accredited graders to do Government grading. In general, beef from older animals is less tender than that from younger ones, but meat from more mature animals is usually more flavorful. The flavor of cooked meat is closely associated with aroma and is believed to be derived from the musclefiber proteins. Juiciness and tenderness are closely related; the method of cooking that retains the fluids and fats of the beef produces the juiciest finished product. Color and flavor of beef increase with the age of the animal.

Keyword

Swiss steak is a dish of meat, usually beef, that is swissed by rolling or pounding before being braised in a cooking pot of stewed vegetables and seasonings.

Cuts of Beef

Usually, completely boned beef comprising the six categories is issued to the dining facility. These cuts, known as the six-way beef categories, are obtained from carcass beef or from wholesale cuts of steers or heifers, which are cut, trimmed, and portioned according to the requirements of the procurement specifications. Each category of beef is packaged separately in units of about 50 pounds. The beef is received in the frozen state, ready to cook except for thawing. It is thawed slowly at reefer temperatures (36° to 38° F.) until almost completely thawed. The thawing period varies according to the size of the meat cut (the larger the size, the longer the time required), the air temperature and circulation in the chill space (moving air accelerates thawing), and the quantity of meat being thawed in a given area. The portions and cuts of this six-way beef are shown in figure. Grilled steaks and oven roasts are cooked by dry-heat methods. Pot roasts, **swiss steaks**, and diced beef are braised (cooked by moist-heat methods); ground beef is baked, grilled, or braised. In addition to the six-way beef, frozen beef liver, corned beef, and dried beef are issued for the preparation of the daily menus.



Preparing beef

Armed Forces Recipe Service contains recipes for cooking beef by dry heat and by moist heat. Each recipe gives specific instructions for preparing the meat and accompaniments. Beef is roasted, grilled, pan-broiled, braised, or cooked in water. Beef liver is breaded and deep-fat fried.

Roasting Beef

Many of the meat dishes served in the dining facility are cooked by roasting, a dry-heat method. Boneless, oven-roast beef is roasted at low temperature for 2 to 4 hours, depending on the size of the roasts. Meat loaf, Salisbury steak, and corned-beef hash are prepared according to the instructions in the recipe and are baked without a cover on the pan and without additional liquids.

Suggestions for Control of Quality

Each beef dish must be carefully prepared as outlined in the recipe to become an acceptable finished product. Care must be taken when roasting beef to insure that the moisture loss and breakdown of the surface fat are not prolonged, causing the surface to become hard and dry. Roasts and meat loaves should not be overcrowded

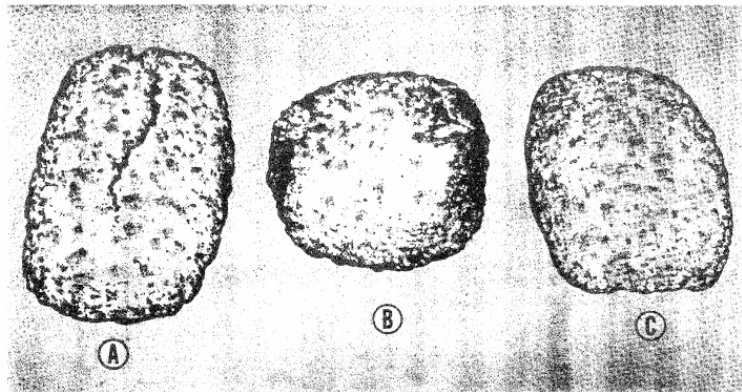
in the pans. They should be cooked far enough in advance to allow them to cool somewhat before they are sliced.

Judging the Quality

Listed below are some suggestions that should help in judging the quality of the finished product:

- (1) The finished product should be juicy and tender and should be cooked to the center to the desired degree of doneness.
- (2) A well-browned roast is usually more flavorful than one that is not.
- (3) Meat loaves crack if vegetables such as onions, celery, and peppers are not chopped finely.
- (4) Roasts cooked at too high a temperature produce more drippings and less meat.
- (5) Standards for doneness of roast beef are as follows:

Rare:	Center, a bright rose red, shading into lighter pink toward the outer portions, changing into dark gray in layer underlying outer browned crust; juice, a bright red; internal temperature, 140° F.
Medium rare:	Center and most slices, a light pink; gray layer underlying crust extends a little toward the center; juice, a light pink; internal temperature, 160° F.
Well done:	Interior, a brownish gray; juice, either colorless or slightly yellow; internal temperature, 170° F.



- A. Onion and celery too large, or insufficient moisture
B. Fat not drained during cooking
C. Properly cooked

Cooking Beef by other Dry-heat Methods

Broiling is classified as a dry-heat method of cooking as are pan broiling and deep-fat frying. In broiling, the heat is applied directly to the meat surface by placing the meat under a gas flame or an electric heating unit or by placing it directly on a heated griddle without added fat. In Army dining facilities, meat is griddle broiled (grilled). Tender cuts of beef are issued for grilling in preparing such dishes as broiled steak, teriyaki steak, or sukiyaki. Ground beef is used for grilled beefburgers and grilled hamburgers. Pan broiling is cooking meat in a pan or skillet, with no addition of fat or liquid; as fat is rendered during the cooking process, it is poured off. Deep-fat frying is considered a dry-heat method of cooking. The meat is covered with a protective coat of breading material and cooked in a deep layer of fat. Thin strips of beef liver are deep-fat fried.' Each type of dish to be served is prepared as outlined in the appropriate recipe. Recipes, from Armed Forces Recipe Service for grilled beef steak and grilled beefburgers.

DID YOU KNOW



Delmonico steak refers to a method of preparation from one of several cuts of beef (typically the rib cut) prepared Delmonico style, originally from the mid-19th century.

Suggestions for Control of Quality

Have the grill or pan hot before placing the meat on it. Brown the meat on one side, and turn and brown on the other. Use tongs for turning the meat to avoid piercing the meat. Do not allow fat to accumulate on the grill or in the pan; broiling or grilling requires no fat. Cook the meat at a moderate temperature to make the meat juicier. When the meat is turned over to cook the opposite side, season the browned side immediately.

Judging the Quality

Steaks should be brown -on the outside and should be cooked to the desired doneness on the inside. The meat should be reddish pink for rare, light pink for medium, and gray or brown for well done.

Braising Beef

Braising is a moist-heat method of cooking in which a very small amount of liquid is used to complete the cooking after the

meat has browned slowly. Extra liquid may be added for braising, or the braising may be done by the steam from the meat while the pan is tightly covered. Types of meat dishes that are cooked by braising include pot roasts, chicken-fried steak, pepper steak, swiss steak, spanish steak, barbecued beef, and beef paprika. The liquid used in braising may be water; meat stock, tomatoes, tomato juice, pureed tomatoes, diluted vinegar, or juice from the meat itself. When water is used, it is added in very small quantities, as needed. Some dishes may be cooked without additional liquid, in a tightly covered Dutch-oven-type pan. The steam from the meat juices collects as liquid inside the lid and drops back to the bottom of pan.

Suggestions for Controlling the Quality

Insure that the meat is well browned so that the finished product is a luscious brown color. The long, slow cooking in moist heat dissolves the color, unless it is well browned beforehand. Some of the flavor of the meat is lost to the liquid, which is used to make gravy or sauce served with the meat. The cooking temperature should be low (never above simmering) to soften the connective tissue. In some cases, the meat should be scored or pounded as in the case of swiss steak before it is cooked, to break the tough connective tissue and make a shorter cooking time possible. The following precautions should help to insure a better finished product:

- If sautéed onions are to be added, do not overbrown them.
- Do not overcook the meat, or it will crumble when served. Do not overcook vegetables to be added to the beef.
- Add water or stock in small amounts if the liquid evaporates.
- Uniformly cut the vegetables to be added to the meat so they will cook evenly.
- If a roux is used to thicken gravy, cook it at least 5 minutes so it will not have a raw flour taste.
- When adding sour cream to the hot liquid, add it slowly and stir constantly. If possible allow the liquid to cool somewhat before adding the sour cream.
- When adding herbs to the liquid, rub them in the palms of the hands to release the flavor.
- When forming salisbury steaks, meatballs, or other meat patties, rub the hands with a small amount of salad oil to prevent the meat from sticking to the hands.

Judging the Quality

Meats cooked by moist heat are generally judged to be properly done when tenderness is satisfactory. Meat that is easily pierced with a fork, is tender enough for chewing.

Both the meat and the gravy should be a deep brown. The gravy should be well seasoned because it is an important part of braised meat dishes.

Cooking Beef in Liquids

Cooking in water or other liquids is a moist-heat method of cooking. This method requires considerably more liquid than is required for braising. The stewing of meat is the cooking of browned or unbrowned small, uniform pieces in a small amount of water at a temperature slightly below boiling. Vegetables may be added. Beef stew may be cooked covered, either in a steam-jacketed kettle or in an oven. Simmering is a term applied to the cooking of unbrowned large pieces of beef in a larger amount of water than is used in braising. In a simmering liquid (from 185° to 200° F.), few bubbles form, and they rise to surface only occasionally. Corned beef is most frequently cooked by **simmering**. Simmering is also the method used to make soup stock. Whether meat is simmered to cook it or to obtain the stock, the amount of water used should be just enough to cover the meat.

Keyword

Simmering is a food preparation technique by which foods are cooked in hot liquids kept just below the boiling point of water (lower than 100 °C or 212 °F) and above poaching temperature (higher than 71–80 °C or 160–180 °F).

Suggestions for Control of Quality

Since some of the flavor of the beef is lost to the liquid, it is important that the liquid be used in making gravy that is served with the meat. Any vegetables added should enhance the flavor, color, and texture of the dish. Vegetables for beef stew are usually diced or sliced in pieces about the size of the meat pieces. The vegetables should be added to the beef stew after it is partially cooked so that they will not be overcooked when the meat is done. Beef should never be boiled if the tenderness, shape, flavor, and nutritive value of the beef are to be preserved. If excess liquid is used, the flavor of both the beef and the broth is diluted.

Judging the Quality

The plasma proteins are coagulated more rapidly in moist heat than in dry heat, since water transfers heat more rapidly than does air. If meat is dry, it was probably cooked at a temperature

that was too high. Meat that is not cooked long enough is tough, whereas meat cooked too long loses its shape or falls apart.

Preparing Veal

Veal is the flesh of young calves. The amount of connective tissue in veal is relatively high, but the connective tissue contains little elastin and becomes very tender under proper cooking conditions. Veal has only a very small layering of fat, a small amount of marbling, and a high moisture content. The cuts resemble beef cuts in shape but are only one-third to one-half the size. Veal is pale, rosy beige in color, whereas beef is red. Because veal has a very delicate flavor, it is often combined with other foods such as cheese or is served with savory sauces. Veal roasts, veal steaks, and ground veal are issued to the dining facilities. Veal roasts, vealburgers, grilled steaks, and ovenbaked steaks with various sauces are prepared in the same manner as beef.



Suggestions for Control of Quality

The following suggestions Should help to insure a palatable finished product:

- Because the layer of fat is thin, moisture in veal evaporates rather rapidly. A roast may be covered with bacon strips, or the surface may be brushed with bacon drippings or vegetable oil to reduce the loss of moisture. Roasts are done when their internal temperature reaches 170° F.
- Veal steaks must be brushed with seasoned fat while they are grilling to prevent a dry finished product.
- When veal steaks are cooked in the oven, they are first breaded and browned to insure a juicy, flavorful dish.
- Cheese added to a veal dish should not be overbrowned.
- Oven-baked steaks should not be allowed to become too brown, or they will lose their eye appeal.
- Care should be taken not to overcook veal, or it will fall apart when served.

Judging the Quality

Roast veal should be firm (not crumbly), tender, and juicy and should have a clear or faintly pink juice. Veal should always be cooked well done: there should be no pink color showing in the meat. Veal products that are breaded such as cutlets should be crisp and evenly brown on the outside and tender and moist on the inside. Breading should not be too thick.

Cuts of Pork

Pork, the flesh of hogs, is the lightest in color of all meats. Young pork is a grayish pink, and the flesh is firm and fine grained. Pork cuts are issued in fresh (frozen) and cured states. Pork butts, hams, loins, spareribs and slices, bacon, and sausage are used to prepare the recipes given in Armed Forces Recipe Service. The loin is considered one of the choicest cuts of pork. It is used for roast pork and for pork chops prepared in a variety of ways by both moist- and dry-heat methods. Spareribs are made from the bony but flavorful rib section of a pork side. The pork butt (often called Boston Butt) is the skinned pork shoulder remaining after the “picnic ham” is removed. The pork butts, which are usually not cured or smoked, can be used for preparing many meat dishes. Hams come to the dining facility in a variety of forms: Cured, precooked boneless; cured, canned, whole or chunks; and boneless fresh ham., Because pork comes from young animals and is high in fat, it is usually tender. However, pork chops are better when cooked in moist heat than when grilled, even though the meat is tender. Pork must be cooked long enough to

insure that the end-point temperature is high enough to destroy trichinella spiralis, an organism that may be present in pork. AR 40-5 specifies a minimum temperature of 150° F. However, an internal temperature of 17° F. is recommended for fresh pork to provide a uniformly cooked product and good acceptance by the troops. Bacon slices are issued as canned, prefried bacon. Also slab bacon is sliced 20 to 22 slices per pound for baking or grilling. Sausages come in a variety of types: frozen pork links and bulk sausage; canned pork links; precooked, frozen, pork-and-beef sausage; and chilled, frozen, and canned cooked frankfurters.

Preparing Pork

Fresh and cured pork are prepared for serving in the dining facility in accordance with the standard recipes in Armed Forces Recipe Service. Highquality pork such as that procured by the Army is uniformly lean and is extensively marbled with a firm white fat. The exterior fat is firm, white, and dry. Even though pork is considered a tender meat, slow cooking temperatures reduce the cooking losses and produce a more tender, juicier meat.

Roasting Pork

Meats cooked in the oven by dry heat are usually served as roasts. Pork loins and fresh pork hams are served as roasts, but bacon, cured ham, pork slices (chops), sausage links, and sausage patties cooked in the oven by dry heat are served as baked items.

Suggestions for Control of Quality

The only way to be sure that roasted pork is done is to use a meat thermometer and to cook the meat to the temperature specified in the recipe. The thermometer must be inserted into the center of the lean if it is to record the temperature of the lean. The temperature of the meat should begin to rise 20 to 30 minutes after the cooking begins. If the temperature does not rise, the thermometer may be imbedded in a fat pocket and should be moved slightly. When the thermometer registers the desired temperature, it should be pushed in slightly and the temperature observed; if the temperature drops, the meat should be cooked longer. Because the temperature of a roast tends to rise after the roast is removed from the oven, it is better to remove the roast when the temperature reaches 30 to 50 below the desired temperature (AR 40-5 specifies a minimum temperature; Armed Forces Recipe Service specifies 170° F. for roast pork and fresh roast ham) to avoid overcooking and to insure a juicier, more tender finished product. When bacon is cooked in the oven, the fat should be poured off as it accumulates. Baking sausages in the oven at high temperatures does

not toughen them; however, it does cause excess loss in the size of the servings. Sausages should be turned occasionally while baking to insure even browning.

Judging the Quality

Bacon should be crisp, without being brittle. Sausage should be cooked until the inside is gray with no tinge of pink showing. If roasted pork or baked ham is properly cooked—

- A fork can easily penetrate the meat.
- The meat can be sliced without crumbling.
- The fat is evenly browned without burned areas.
- The drippings are not burned.
- The meat of roost pork is gray with no tinge of pink showing.

Grilling Pork

Ham slices, sausages, frankfurters, and bacon may be cooked on the grill. Sausage links and sausage patties must be thoroughly cooked. Precooked sausage needs less cooking; it may be grilled in about half the time required for thoroughly cooking other sausages.

Suggestions for Control of Quality

Sausage links, sausage patties, and bacon cooked on the grill should be turned frequently to insure even browning. Excess fat should be drained from the griddle as it accumulates to prevent it from burning and producing offensive odors. The rim of fat on ham slices should be slashed so the slices brown evenly and do not curl.

Judging the Quality

Pork properly cooked by grilling should have the characteristics listed below:

- Ham slices should be evenly browned without any burned areas.
- Sausage links and patties should be cooked until the inside is gray with no tinge of pink remaining.
- The outside of sausage links and patties should be a deep brown but should not be burned.
- Bacon should be crisp and brown without being burned.
- Frankfurters should be juicy and plump with no burned areas.

Braising Pork

Pork is usually tender enough to be cooked by a dry-heat method, but since it must be thoroughly cooked, many recipes in Armed Forces Recipe Service indicate cooking by a moist-heat method. For braising pork slices (chops) and spareribs, the meat is first browned, liquid is added, the cooking pan is covered to keep in the steam, and the meat is cooked in the oven. Excess fat is drained from the pan as it accumulates or before the liquid is added.

Cooking Pork in Water

For use in chop suey, pork butts are diced, browned, and simmered in water. Frankfurters may be simmered and served as indicated in many recipes. The following suggestions should help to insure a quality finished product:

- When diced pork is to be simmered, brown it in its own fat.
- Simmer diced pork in just enough water to cover the meat.
- Prepare simmered frankfurters in batches so that only plump juicy ones are served. Simmered frankfurters left on the serving line for long periods of time shrivel and become tough and discolored.

Preparing Lamb

Lamb is the meat of young sheep, less than a year old. Lamb flesh is darker red than veal, and the cuts are smaller. Most cuts of lamb are tender, and unlike veal, lamb steaks and chops may be broiled without becoming dry. Lamb roasts and chops are issued to dining facilities. These cuts are roasted, braised, or grilled in the same manner as other meats. The following suggestions should help to insure a quality finished product:

- Do not overcook a roast, or it will be difficult to slice.
- Insert the meat thermometer in the roast after the meat has been cooking 2 hours, and roast the meat until the thermometer registers the desired temperature (165° F. for rare, 175° F. for medium, and 180° F. for well done).
- Let roasts stand 20 minutes before slicing them.
- Serve meat very hot, or the fat will congeal.

HOW TO COOK MEAT

Meat is an important part of your diet for getting protein and a healthy amount of minerals. It can be cooked in a variety of ways, such as roasting it in an oven,

grilling it, or searing it in a pan. Whichever method of cooking you choose, always make sure you cook it thoroughly so you don't catch any foodborne illnesses.

Keyword

Grilling is a form of cooking that involves dry heat applied to the surface of food, commonly from above, below or from the side.

Preparing the Meat for Cooking



Thaw frozen meat in the fridge for 24 hours. Keep the frozen foods chilled while they thaw so they do not develop harmful bacteria. Meat in the fridge is safe to use 1 to 2 days after it's completely thawed or it can be refrozen if you end up not using it.

- Larger meats will require more time to thaw in the fridge.
- You can also thaw meat in a sink filled with cold water. Put the meat in a water-tight bag and fully submerge it in the sink. Change the water every 30 minutes as it starts to warm up. Meat thawed this way needs to be cooked immediately.
- Never thaw foods at room temperature or else harmful bacteria could form.

A large frozen turkey should be thawed in the fridge for 24 hours for every 5 pounds (2.3 kg) it weighs.



REMEMBER

Take the chill off meat before you cook it. Alex Hong, executive chef at Sorrel in San Francisco, says: «Temper whatever you're cooking by letting it come up to room temperature. It's going to cook so much more evenly. For instance, if you take a steak out of the refrigerator and leave it to come up to room temperature for 2 hours and then you cook it, the evenness will be almost perfect. If you take a cold steak out of the refrigerator and put it in a hot pan, you're going to get a giant grey mark around the steak.»



Marinate meat for up to 12 hours for added flavor. Once the meat is thawed, put the marinade in a resealable plastic bag along with your meat and leave it in the fridge. Not only will it help tenderize your meat, but the meat will absorb the flavors and make your meat tastier.

- Marinating for longer than 12 hours can make your meat too mushy or stringy once it's time to cook it.
- Marinades can be made with balsamic vinegar, red wine, or any liquid with herbs and spices.



Pull the meat out of the fridge at least 15-30 minutes before you cook it. Keep the meat on a baking tray or in a bag so you don't contaminate your countertops. Meat that's too cold will cook unevenly and make it overdone on the outside while it's undercooked on the inside.



Remove any excess fat from your cut with a knife. Hold the bit of fat with your non-dominant hand and pull it away from the meat until it's taut. Cut with a chef's knife where the fat meets the meat with a slow slicing motion. Tilt the knife towards the fat as you cut so you don't remove portions of good meat.

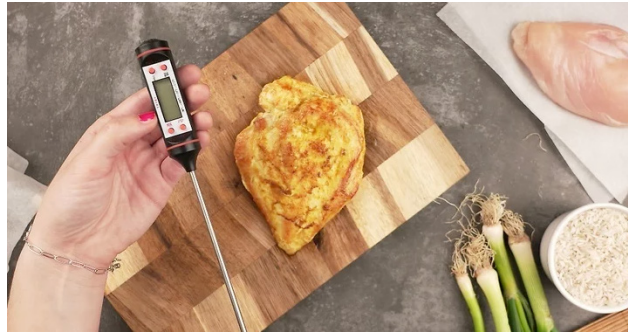
- Remove small strips at a time so you have the most control.
- Leave some fat on the meat. The fat will render as you cook it and make your meat more flavorful.
- Cook meat like venison, buffalo, or chicken for lower fat content.



Season the meat with salt and pepper. Add the seasonings right before you plan on cooking the meat. Sprinkle $\frac{3}{4}$ tsp (4 g) of salt and pepper per 1 lb (0.45 kg) and rub it in so the meat absorbs the flavor as it cooks.

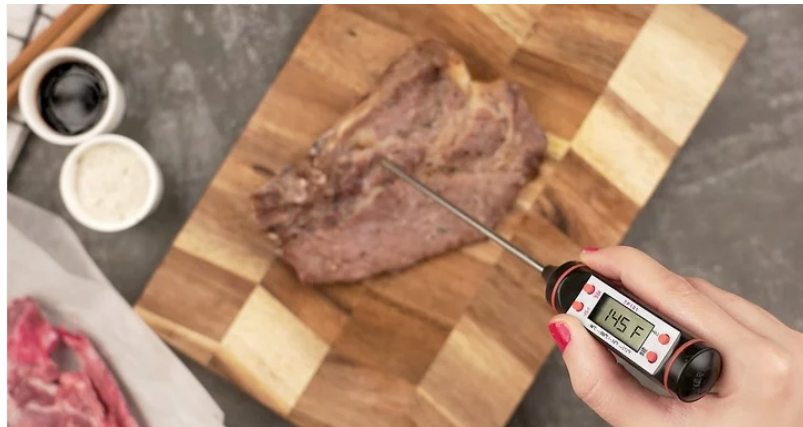
- Add other spices and herbs if you want a more complex flavor, but usually a simple season will do the trick.

Cooking Meat to the Proper Temperature



Check the internal temperature with a meat thermometer before serving. Stick the meat thermometer into the thickest part of the meat. Wait for the reading to determine if your meat has finished cooking. Sanitize the thermometer with hot water and dish soap after you take the reading.

- Pull the meat away from its heat source while you take the measurement so it doesn't affect your reading.



Cook red meat to 145 °F (63 °C). Measure the temperatures of steaks, chops, or roasts until they are at the correct temperature. This includes beef, pork, lamb, or veal. Once the meat is at temperature, let it rest for 3 minutes.

- Don't eat rare steaks if you have a weak immune system.

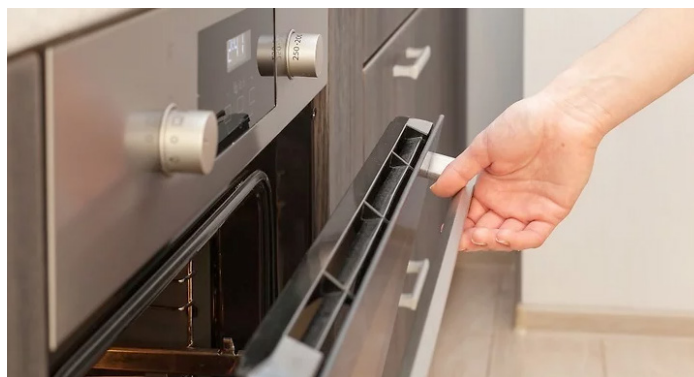


Make sure ground red meat is above 160 °F (71 °C). Break apart larger chunks of ground meat to make them cook faster. Make sure ground meat is browned all the way through before consumption.



Prepare poultry to 165 °F (74 °C). Every cut of poultry needs to be cook thoroughly since it can cause food poisoning when consumed raw. Make sure the poultry is an even color throughout and that the juices inside are clear.

Roasting Meat in the Oven



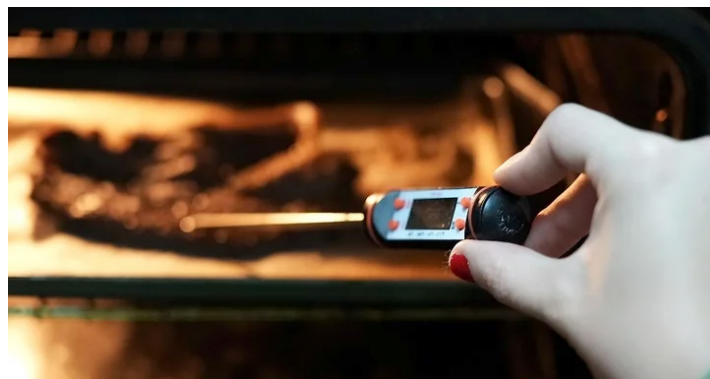
Preheat your oven to 425 °F (218 °C). Keep the oven at a higher temperature to make the meat crispier and more firm. Start preheating your oven as you prepare the meat so that that it's ready when you're ready to start cooking.

- If you want tender meat that “falls off the bone,” keep your heat around 300–350 °F (149–177 °C). It will take longer to fully cook at lower heat.



Put your meat into the oven on a baking pan. Before placing the meat on the baking pan, oil it with cooking spray or your choice of cooking oil so the meat doesn't stick to it. Add the meat, then place the pan on the center rack of the oven and close the door.

- If you're cooking a full chicken, find a pan with an attachable wire rack. Place the chicken on the wire rack so heat can evenly cook all sides of the bird and makes the skin crispy.
- Avoid opening the door while the meat is cooking. Each time you open your oven, heat escapes and cooking your meat will take even longer.



Cook the meat until it reaches a safe internal temperature throughout. Cooking time depends on the size and type of meat you're making. A smaller portion of meat will take around 30 to 40 minutes, but larger cuts or full roasts could take up to a few hours.

- Chicken breasts will take 20 to 30 minutes to cook, but a full chicken will take around an hour and a half.
- Cook steaks for 15 to 20 minutes in the oven.
- Pork roasts vary on the cut you're cooking, but it usually takes between 15 to 20 minutes per 1 lb (0.45 kg).
- Check the temperature after the first 30 minutes, and then every 15-20 minutes afterward.



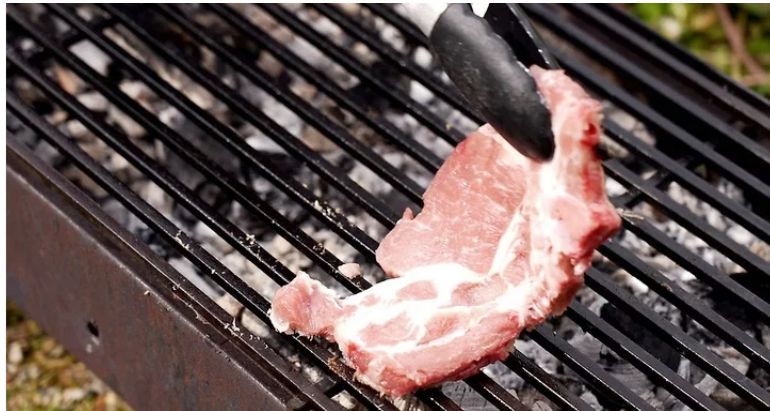
Let the meat rest for 10 minutes after removing it from the oven. Don't cut into the meat immediately after you pull it out of the oven or else the juices will run out and your meat will start to dry. Leave the meat to rest in the pan on the stovetop before cutting into it.

Grilling Meat



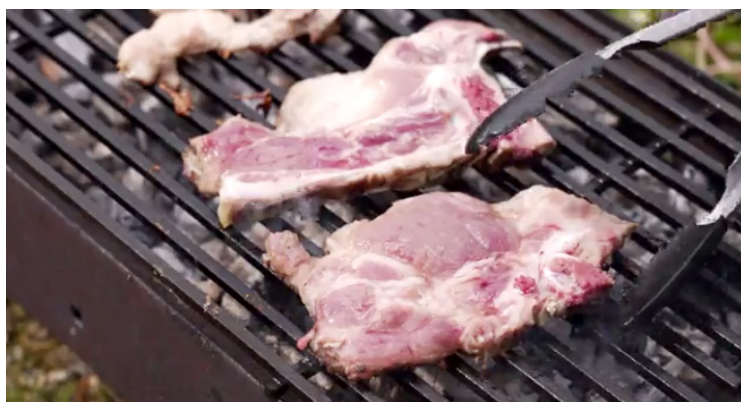
Turn your grill on or light the charcoal. Turn the starter dial on your gas grill to light it. If you have a charcoal grill, squirt a small amount of lighter fluid or use 2 crumbled pieces of newspaper and light it with a long-handled lighter. Let the grill preheat for 15 minutes with the lid on.

- Keep the temperature at a medium heat if you can control it. A grill that's too hot will start to burn the outside of the meat while undercooking the inside.
- Make sure your grill grates are clean before you cook on them.



Lay your meat on the grill over the flames and close the lid. Spread your meat out evenly across the grates so they are over the flames. Immediately replace the lid so that the heat is contained.

- Make sure your meat isn't dripping with marinade, otherwise it could cause the flames to flare up.



Flip your meat halfway through its cook time. Look at the sides of your meat to see a change of color. Red meats will start to brown and poultry will turn white as it cooks. Once you see the change of color halfway up your meat, use a pair of

tongs or a long-handled spatula to turn your meat over so it can get grill marks on both sides.

- Rotate the meat in the middle of cooking each side to get the traditional crossing grill marks.



Grill the meat until it's completely cooked. Chicken breasts take about 8 minutes per side when over direct heat, but 10 to 12 minutes if they're not over a flame. Grill steaks that are thinner than 1.5 in (3.8 cm) for 5 minutes on each side, but use a meat thermometer to check the temperature for thicker steaks. Pork chops take between 12 to 20 minutes to fully cook over the grill.

- Always check the internal temperatures since grill heat may vary.

Searing Meat in a Pan



Heat an oiled skillet on the stove over medium-high heat. Spread the cooking oil across the whole surface of the skillet by tipping and rotating it. Keep the skillet over the heat until the oil starts to ripple.

Kitchen Essentials and Basic Food Preparation

- Non-stick pans will make your sear less crispy. Opt for a cast iron skillet.



Place the meat on the pan once it's piping hot. Make sure the meat isn't dripping with marinade before you put it on the pan. Before the oil starts to smoke, lay the meat down in the center of the pan, or spread out smaller pieces of meat evenly so the meat isn't crowded.

- Don't move the meat around the pan once you've dropped it in.



Flip the meat once it has a dark-colored sear on the bottom. Use tongs or spatula to try and lift the meat off of the pan to check on the sear's color. If the meat sticks to the pan, wait to flip it. Once you see a dark sear or the breading is golden brown, flip your meat over.



Cook the meat thoroughly. The size and type of meat will affect the time it takes for it to cook. A 6 oz (170 g) chicken breast will take approximately 5 minutes for each side to cook through. A beef steak or pork tenderloin that's 1 in (2.5 cm) thick will take 3-4 minutes on each side.

- If your meat isn't at the right temperature and you're afraid of the pan burning it, remove the meat from the skillet and place it on a baking pan. Put it into your oven on the broil setting for 2-3 minutes before checking the temperature again.

REMEMBER

Make sure meats are fully cooked. The minimum internal temperatures are 145 °F (63 °C) for whole pieces of pork, beef, or lamb, 160 °F (71 °C) for ground red meat, and 165 °F (74 °C) for poultry.

HOW TO GRILL MEAT

Grilling meat can differ depending on the type of grill that you are using. This explanation is only for those using a gas grill to cook steak.

Ingredients

- Meat for grilling, such as steak
- Salt and pepper or a spice rub for seasoning
- Olive oil (optional)

Steps



Kitchen Essentials and Basic Food Preparation

Turn on your grill or your gas cooker on (either turn on the gas and ignite, or put coals in the bottom and light).

- If using a gas grill, leave the hood down/closed for about 10 minutes to burn off all excess residue and to get the grills nice and hot.
- If using charcoal, make a nice pile about the diameter of 75-80% of the total grill space, a couple inches high, and light with a match. Allow the coals to all catch, turn red, and stop emitting flames. Once most coals are glowing red and are silver/gray, you're ready.



While you are waiting for your grill to heat up, take your pieces of meat and tenderize it using a tenderizing hammer.



Season your meat using any type of seasoning that suits your taste. A popular way to do it is: Pat the meat dry, season it with salt and pepper, and rub a light coat of olive oil on it. Note: If you drench the meat in oil, you will cause flare-ups, which will cause the meat to unnecessarily burn and carbonize - imparting a very unpleasant flavor - ash. So, keep the coat of oil light.



Lay the meat down on the grill and do not move it until grill lines/brown caramelization (specifically called the “Maillard reaction”) occurs on the entire surface.



Turn the meat over using a spatula. Try not to use a fork at this punctures the meat and results in loss of juice.



Remove the meat when it's almost done to your liking. A steak will cook a little after you remove it from the grill or oven, so stop broiling when the steak tests slightly less done than desired.

- Use a meat thermometer and insert it into the thickest part of the steak. Thermometer readings should be: 120 °F (49 °C) to 125 °F (52 °C) for rare; 130 °F (54 °C) to 135 °F (57 °C) for medium rare and 140 °F (60 °C) to 145 °F (63 °C) for medium. Or...
- Press the meat with your finger. Rare meat will be soft and wobbly, medium will have a springy firmness and well done will feel very firm and unyielding.



FISH

Fish, which contain high-quality protein, are a valuable source of minerals and essential vitamins A, B, and D. In general, the mineral content of fish (magnesium, calcium, phosphorous, iron, copper, and iodine) is similar to that of beef, except that the iodine content of fish is higher. The fat content of fish varies, but pound for pound, fish have about half the calories of beef and pork. Fish are generally classified as finfish or shellfish. Finfish are further divided into two types, lean and fat. The lean fish, which include haddock, halibut, cod, flounder, and perch, contain less than 5 percent fat. The fat fish, which include bluefish, mackerel, salmon, and shad, contain more than 5 percent fat. The type of fish determines the method of cooking. Fat fish are best for baking and broiling, because the fat content prevents them from drying out during cooking. Lean fish may be cooked by these methods if brushed or basted with melted fat. Because of their low fat content, both types of finfish can be fried successfully. Shellfish issued to the dining facility include clams, scallops, oysters, and shrimp. In general, shellfish can be prepared by the same cooking methods used for finfish. Fish have less fat, extractives, connective tissues, and color than meats. Because of these differences, the objectives of fish cookery are to change the texture, to develop the flavor and color, and to retain the form. Although fresh fish have little odor, they deteriorate rapidly. To prevent deterioration, frozen fish should be stored in the freezer in the original wrapper and should not be thawed until time for preparation. For the best flavor, the fish should be thawed by placing them in the refrigerator for several hours. This procedure prevents the drip that takes place when fish are thawed at room temperature, and reduces the loss of moisture and nutrients. Fish once thawed should be cooked immediately and should never be refrozen.

Preparing Finfish

Fresh finfish, which are issued in the frozen state to the dining facility, include fillets, steaks, and portions (sticks). Fillets, the sides of the fish cut lengthwise away from the backbone, are practically boneless and are ready to cook. A fillet cut from the side of a fish is called a single fillet; a fillet may have the skin left on or may be skinless. Fish steaks are cross-section slices of the larger size dressed fish. A cross section of the backbone is usually the only bone in the steaks, which are ready to cook as purchased. Frozen portions are uniformly shaped fish flesh, breaded and ready to cook. Armed Forces Recipe Service contains recipes for cooking finfish by baking, oven frying, and deep-fat frying. Finfish are tender because they have little connective tissue. They require a short cooking time at a low temperature.

Baking Finfish

Thawed fish fillets or steaks are placed in a single layer on a greased pan and baked as prescribed in the recipe. Thawed fish fillets are dredged in crumbs and then baked; frozen fish portions may be baked also. To provide variety and to prevent drying, sauces may be used with the baked fish.

Suggestions for Control of Quality

To control the quality and insure the palatability of the finished product, the suggestions given below should be followed:

- When baking lean fish, baste them often with butter or margarine.
- Avoid overcooking. Fish is done when its protein is coagulated, that is, it flakes easily.
- Garnish fish with paprika, parsley, and other colorful, edible food items to improve the appearance of the dish.
- Exercise caution when serving baked fish, because it breaks and crumbles easily.

Judging the Quality

When the flesh of the fish is cooked just enough to flake easily when tested with a fork, the end product is moist, tender, and flavorful. Properly baked fish is not dry and does not show evidence of burning. On the other hand, if the flesh is gluey, it is undercooked.

Deep-Fat Frying Finfish

Lean fish such as haddock and flounder are best for frying. The frozen fish fillets are breaded to insure a crisp, golden-brown coating. Too many servings of fish should not be fried at one time, because the temperature of the fat will be reduced so low that the pieces will not cook evenly and will absorb excess fat. The flake test method is used to determine the doneness of fish.

Suggestions for Control of Quality

The following suggestions should help to control the quality of deep-fat-fried fish:

- Prepare the fish, and have them ready so as to avoid premature heating of the fat.

- Shake off excess flour, cornmeal, crumbs, or other coating material to prevent it from dropping off into the fat and burning, thereby hastening the decomposition of the fat.
- Insure that the surface of the fish is dry to avoid undue amounts of moisture in the fat.
- Heat the fat in which the fish is to be cooked to the temperature specified in the recipe. Low temperatures permit the fish to absorb more fat.
- Add small amounts of fish at a time so the temperature of the fat does not drop too rapidly.
- Do not overbrown the fish, or the servings will lack eye appeal.
- Drain the fish to remove excess fat.

Keyword

Tuna is typically gutted by hand and later precooked for prescribed times of 45 minutes to three hours.

Judging the Quality

Deep-fat-fried fish should be golden brown and moist, and should be cooked until the flesh flakes easily when tested with a fork. Overcooked fish are hard and dry.

Pan Frying Fish

Thawed fish fillets or steaks may be pan fried or cooked on a well-greased 350° F. griddle. The fat should be hot before the fish are placed in the pan, to prevent the flesh from sticking to the pan. If the skin is left on the fish, the fish should be placed skin side up in the pan. The fat should remain at a moderate temperature during the cooking process.

Preparing Canned Finfish

Canned salmon is included on the menu for Army dining facilities in the form of salmon cakes, loaf, and salad and as scalloped salmon. Canned **tuna** is used to prepare baked tuna and noodles, tuna salad, and scalloped tuna and peas. Canned finfish are prepared by the same cooking methods as fresh fish; for example, salmon cakes are deep-fat fried, and tuna and noodles are baked. The same precautions are taken to control the quality of cooked, canned finfish as are used for fresh finfish. The canned fish should produce a palatable, appetizing dish.

Preparing Shellfish

Because shellfish, like finfish, deteriorate very rapidly, they must be cooked as soon as they are thawed. Once thawed, they should not be refrozen. Usually, frozen oysters, shrimp, scallops, and clams are issued to dining facilities. However, canned shrimp and clams and dehydrated shrimp may be substituted in the same recipes. Shellfish, a tender meat, are often cooked by moist heat, but become tough quickly at temperatures above simmering. For example, only 5 minutes is required to cook shrimp for use in salads and curries.

Shrimp

All varieties of shrimp have tender, white meat and have a distinctive flavor that is very popular. When they are cooked, they turn an attractive pink color. Simmering (actually the finished product is called “boiled” shrimp) is the basic method of cooking shrimp, although they may be peeled and then cooked by the same methods used for fresh finfish. Also Armed Forces Recipe Service gives a recipe for shrimp gumbo, a soup. If shrimp are not issued deveined, the dark sand vein down the back must be removed. Guidelines for using shrimp, from Armed Forces Recipe Service. The following are some additional guidelines:

- Cooked shrimp should be immediately removed from the water, or they will shrink and toughen.
- Deep-fat frying of shrimp requires the same control of quality as deep-fat frying finfish.
- Overcooking reduces the flavor and causes toughness.

Oysters

Frozen, shucked oysters are issued to dining facilities for the preparation of fried and scalloped oysters, and of oyster stew. Regardless of the cooking method, just enough heat should be applied to heat the oyster through and to leave them plump and tender. All oyster dishes should be served piping hot. For deep-fat frying oysters, the coating should be pressed firmly on each oyster so it will not fall off while frying. The same precautions should be taken for frying oysters as for frying of other foods. The following information should help in controlling the quality of the finished product:

- Overhandling of oysters bruises or breaks the membranes.
- Using a fork for handling oysters is not recommended.
- Stewing of oysters should continue only until the edges of the oysters begin to curl.

- Overcooking produces tough oysters.

Scallops

A scallop is actually the round, meaty muscle which opens and closes the scallop shell. It is a solid piece of cream-colored, very lean, juicy flesh which has a sweet, delicate flavor. Scallops are issued in the frozen state. They may be deep-fat fried, baked with a sauce or made into stew. Scallops are deep-fat fried in the same manner as finfish (pars 22).

Clams

Clams are bivalves which have darker flesh than that of oysters. The most popular clam dish is chowder or soup. Some clams can also be deep-fat fried or steamed, and others can be served raw as cocktails. If clams are overheated, they become tough. When canned clams are issued for the preparation of a clam dish, they are substituted as indicated in the standard recipe.

HOW TO COOK FISH

Fish is an extremely versatile food that can be prepared in a wide variety of tasty ways. Not only is fish extremely tasty, but it contains lots of nutritional protein and healthy fats, such as omega 3 acids. Any cook worth their salt will have to know how to prepare fish at some point in their lives, and this is as good a place as any to learn. So grab a fillet, a pan, your natural curiosity, and an appetite. Let's cook!

Mastering the Cooking Basics



Source the freshest fish available. Of course, fresh ingredients are important anytime you're cooking, but with fish, it's especially important. You can disguise some three-day old chicken pretty easily, but it's much tougher to disguise some cod that's been sitting around for three days. In order to cook the best fish of your live, you'll want to get cozy with your fishmonger.

- The best trick to getting the freshest fish available is to simply ask. Go up to the fishmonger manning the fish in your local grocery store and ask them what's fresh today. This will sometimes require being flexible about the kind of fish you cook, but it's for the better. Fresh fish almost invariably tastes better than old fish, whether it's salmon, mackerel, tuna, or swordfish — the list goes on.
- The freshest fish will smell of the sea (briny) but not fishy; the gills should be bright and moist; the meat firm and springy; and the scales should not be dull or flake off easily.



Get familiar with your thermometer. The secret to cooking fish is knowing the temperature at which they're finished cooking. In order to do this, you'll want to use a food thermometer until you get the hang of things and can tell whether your fish is done by touching or merely looking at it. Most fish are perfectly cooked when they reach an internal temperature of 120° - 145°F (~49° - 63°C).



Know that it's okay to undercook most fish. Ever heard of sushi? Or how about ceviche? These are two fish dishes that are not cooked at all. Unlike undercooked poultry, which carries the risk of salmonella, fish are okay to eat undercooked or even raw.

- Although raw or undercooked fish can contain parasites, the incidence rate of serious health concerns is serially overstated. You should feel very safe eating undercooked fish.
- Some fish are better raw (or undercooked)! Fish like tuna are often given a light sear on both sides before removing from the heat and serving. Tuna tartar, famously, isn't cooked at all.



Know the three basic kinds of fish. Fish come in three basic varieties, each of which tends to be cooked in a different way and contains different nutritional properties. Knowing your way around the basic varieties will help you become a better cook:

- *White fish* — cod, plaice, sole, hake and haddock, among others. These fish have translucent skin that turns an opalescent white when being cooked. Usually battered and deep fried, they form the basis of the classic English fish and chips.
- *Oily fish* — salmon, trout, kipper and sardines, among others. Oily fish are oilier than other varieties, but contain good oils (omega 3 fatty acids). They are often grilled, baked, or steamed.
- *Shellfish* — shrimp, scallops, mussels, and oysters, among others. Shellfish are categorized either as «crustaceans» (shrimp) or «mollusks» (oysters). Commonly bottom feeders, shellfish are harder to digest than either white or oily fish.

Keyword

Marinades often use an acid (like vinegar or citrus juice) or an enzyme (like mango, papaya, or kiwi fruit) to enhance flavors and change surface texture.



Experiment with marinades, but know that most fish taste wonderful with just salt and pepper. There are tons of different marinades that you can experiment with when cooking fish — soy sauce and honey works great on salmon, while olive oil and lemon work nice on whitefish. But ultimately, great fish — like great meat — tastes exquisite when you let the taste of the actual fish, and not the **marinade**, take over.



Cook with your fish as dry as possible. Dry off your fish before cooking, whatever method of cooking you decide to use. Especially important for frying or pan-frying, excess moisture will cool down hot oil. Try to pat down fish fillets or steaks with a dry paper towel before cooking for best results.



Thaw your fish before cooking. For best results, of course, you'll want to use fresh fish. But let's face it — fresh fish is expensive, a luxury that not all of us can afford. Frozen fish is a nice alternative, but you'll want to thaw your fish for a day in the refrigerator before cooking for best results. Oh, and remember to pat it down to remove excess moisture before cooking!

- You can bake frozen fish, for example, but you'll want to double the normal cooking time from your recipe. Cooking frozen fish is very tricky however, and shouldn't be done as a rule of thumb if you can afford it.

Different Types of Cooking



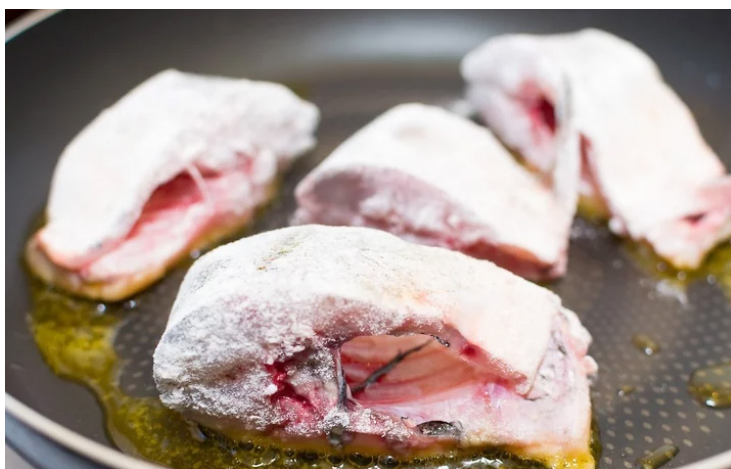
Try grilling fish. Perfect for summer months, grilling fish is both easy and enjoyable. With your coals or gas grill, you'll want to try to make a hot pile and a cold pile, so that you can cook the fish over low heat for the majority of the time, and then give it some color by finishing the cooking over high heat at the very end. Be sure to use the thermometer to get the temperature correct, and remember that fish cooks extremely quickly!

- When grilling fish, be sure to oil the grill *and* the fish generously before cooking. A well-oiled fish and grill will keep the fish from sticking to the grate when you choose to flip it. If you want to, you can also use an aluminum foil pouch to keep the fish in as it cooks; this saves cleanup time and cooks the fish very nicely.
- Remember to choose the right kind of fish for grilling. Meaty, hearty fish like salmon, halibut, and swordfish work best on the grill, especially if you can get them cut into steaks. Delicate white fish like cod, flounder, or sole tend to fall apart easier on the grill, making for a less than ideal marriage between grill and fish.



Bake, bake away. Probably the healthiest cooking option available, baking relies on dry heat and less oil to thoroughly bring the fish to perfection. Line a baking tray with wax paper or aluminum foil, thoroughly oil the fish (or paint with a dab of melted butter), and cook at a lower heat for a longer time. Here's some more specific pointers for you to remember as you bake fish:

- If you're baking with a fish fillet that has a thicker center and thin sides, curl the thin sides underneath the fish as it cooks. That way, the sides won't be overcooked by the time the rest of the center is done.
- Decide on your cooking temperature. Because fish are delicate and dry out easily, a lot of cooks recommend baking fish at low temperatures (think 250° F) for longer periods (20 minutes for fillets). For thicker (center cut) fish, many chefs recommend cooking at higher temperatures (400°F) for less time (15 minutes), although cooking times depend on the thickness of the cut.
- Try the 10-minute rule for baking fish, or "Canadian cooking method." Measure the cut of fish at its thickest point. For every inch of thickness, cook for 10 minutes at 400° - 450°F. Pro-rate the ratio for uneven thicknesses. For example, a 1.5 inch (3.8 cm) center cut piece of salmon should be cooked for 15 minutes at around 425° F.
- For added flavor and moisture, think about adding herbs and aromatics to your baked fish. Lemon and capers or dill works great with salmon as well as with other types of fish. Bread crumbs work well with white fish, particularly tilapia.



Pan-fry your fish to perfection. Pan frying gives you the option of being a little more creative with your fish. Not only can you dredge your fish in flour or cornmeal to get a nice crunchy exterior, but you can also make sauces from the juices leftover in the bottom of the pan. Here are some secrets for pan-frying fish to perfection.

- Start off with enough oil and a hot pan. Oil your steel pan generously but not excessively and get it *hot*. Starting off hot helps cook the skin on the fish quickly, allowing it to adhere to the meat of the fish for nice presentation and an even nicer feel in the mouth.
- Always pan-fry with skin side down to begin with. That way, your skin browns evenly and adheres to the meat of the fish.
- After a minute or two on medium or high heat, turn the heat down to medium-low or low. Cook the fish slowly from here on out. Cook too hot at the moisture will evaporate from the fish before it's fully cooked, leading to a drier fish.
- Flip once! Start off cooking the fish skin side down at high temperature. Turn the temp down significantly, and continue cooking for a little bit. Flip the fish once, and only once. Continue cooking the fish until your thermometer reads about 137°F. If you don't have a thermometer, you can tell that the fish is cooked if you can easily cut and flake the meat with a fork.



Poach your fish. The idea behind poaching is to cook the fish through by submerging it in a hot or simmering, but not boiling, liquid inside a covered pan. The liquid should consist mostly of water, but other ingredients are usually added to increase the flavor. White wine and salt are commonly used, along with herbs (thyme, rosemary, parsley, etc.) and/or vegetables (onions, celery, carrots, etc.).

- Try poaching with court bouillon, an excellent poaching liquid. Court bouillon is commonly made out of water, salt, white wine, vegetables (usually mirepoix) and a bouquet garni. Make Bouquet Garni, or herb bouquet.
- There are two ways to poach: The “deep” poach, which is completely submerging the fish in a poaching liquid, or the “shallow” poach, where the

fish is partially submerged in poaching liquid. Deep poached fish typically do not need a cover for the pot, while shallow poached fish typically do.

- In general, your poaching liquid should only be about 160 - 180°F. This means a slight shimmering or quivering on the surface of the liquid, and maybe a bubble or two there. For hotter, simmering poaching liquids, the cooking time will decrease significantly.
- Which fish are great for poaching? Arctic char, barramundi, halibut, mahi mahi, striped bass, sturgeon, and tuna all work excellent in poaching liquid.



Fry fish. Fried fish feeds the soul. Although it is less healthy than poaching or baking, it can elevate an «ordinary» fish like catfish into an art form. Fish are usually battered and then dunked into a hot pan filled with oil. Here are some basics for you to remember as you fry fish:

- Decide on dredge vs. batter. You can dredge your fish in flour and egg, making for a lighter fish, or whip up a batter out of beer or buttermilk for a thicker, crunchier shell. Cooking times do not vary significantly for either method.
- You'll most likely want your oil to be at around 375°F when you start frying, and cook the fillets for about 3 to 4 minutes, or until golden brown. One trick for determining whether you've got the right heat for frying is to float a strike-anywhere match on top of the frying liquid. The match has a flash point of 365°F, around the ideal cooking temperature. It's not a Martha Stewart-approved trick, but it will definitely get the job done!

Trying Specific Recipes



Make almond crusted salmon. The crisp nuttiness of almonds marries perfectly with the rich, unctuousness of the salmon. A no-nonsense alternative to breaded salmon!



Grill up a whole sea bass. That's right, a whole fish. In many cultures the eyes and cheeks of a fish are considered a delicacy. Stuffed with some fruits, veggies, or herbs, this makes a truly transcendent dish.



Try fennel topped trout. This recipe involves fennel, which doesn't overpower the delicate trout. Add in ginger, shallot, and lemon peel, and you've got a nice little slaw to go over your trout.



Make some lemon-baked cod. Cod can be baked to perfection with just a little bit of butter, lemon, and onion. Delicious!



Fry up some flounder. This bottom-feeding fish with two eyes on one side of its face is surprisingly delicate, seeing as it doesn't move around very much and thus has a high fat content. For a quick but tasty morsel.

POULTRY

Poultry flesh contains high quality protein as well as fat, minerals, and vitamins. The amount of fat, minerals, and vitamins varies with the age of the bird. Young poultry have less fat and therefore fewer calories than most meats. The fat content of light meat is lower than that of dark meat. Chickens, turkeys, and ducks are the types of poultry served in Army dining facilities. In general, the cooking procedures for poultry are the same as those for meats. The old or tough birds are cooked by moist heat methods, and the younger ones by quicker methods. Regardless of the cooking method, poultry should always be cooked well done. For baking, large birds should be cooked slowly to reduce shrinkage and to retain moisture, and smaller birds should be cooked at somewhat higher temperatures to prevent them from drying out while cooking. Although raw poultry has little flavor, it develops flavor during cooking. The dark meat is usually more juicy but less tender than the light meat. Like most other high-protein foods, poultry is very perishable and should be refrigerated at a low temperature (32° to 35° F.). Usually, poultry is issued to dining facilities in the frozen state. Once thawed, poultry should not be refrozen. Hard-frozen birds may be kept in the original packaging for about 3 days at a temperature of 32° to 35° F.

Preparing Chicken

Chickens are classified according to age and tenderness. Tender birds called broilers, fryers, or roasters are usually less than 1 year old and can be cooked by dry-heat methods. The recipes for chicken in Armed Forces Recipe Service indicate that the

broiler-fryers are issued for baking, for deep-fat frying, and for cooking moist-heat dishes such as chicken pot pie, barbecued chicken, and chicken a la king. These chickens are under 16 weeks old and have very tender flesh and flexible skin. Roasters are young chickens of either sex and are 5 to 9 months old; they have tender flesh and flexible skin. Moderate heat should be used in cooking chicken to develop maximum flavor, tenderness, color, and juiciness. Intense heat hardens and toughens the protein, shrinks the meat, and causes the juices to be released, thus resulting in a less palatable meat.

Baking Chicken

When the recipe calls for baked chicken, broiler-fryer chickens are prepared and cooked whole in the oven. Baked chicken, however, is usually cut into serving pieces and prepared for serving as savory baked chicken, as barbecued chicken, or as oven-fried chicken.

Suggestions for the Control of Quality

Each recipe gives the method of preparation and gives any notes needed to insure a palatable food item. The following are additional suggestions that should help to control the quality of baked chicken:

- When a meat thermometer is used to control temperature, it should be inserted between the thigh and the body of the chicken and should not be allowed to touch any bone. The meat is done when the temperature reaches 180° F. Another method of determining doneness is to twist the leg bone; if the joint between the drumstick and the thigh yields easily or separates, the meat is done.
- The legs and wings of the chicken must be secured so the chicken cooks more evenly and retains its shape. The modern and convenient method for preparing chicken for roasting is to tuck the ends of the drumsticks back under the skin flap at the end of the breastbone and to tuck the wings behind the back.
- Baked chicken should be allowed to cool 15 to 30 minutes for easier carving.

Judging the Quality

Roasted chicken should have brown, tender skin and moist, flavorful meat firm enough for clean-cut slices. When the meat is cut, there should be no evidence of blood, indicating raw or rare areas. The skin of the chicken should be crisp and brown with no splitting of the meat on the thighs or breast.

Deep-Fat Frying Chicken

The standard recipe for fried chicken gives the procedures for the preparation and lists some notes which should help in controlling and in judging the quality of the finished product. The same precautions should be taken for deep-fat frying of chicken as are taken for deep-fat frying of finfish. Fried chicken should be crisp and flavorful, should be well cooked to the bone. It should have a brown surface, tender skin, and juicy, tender flesh with low fat absorption (not greasy).

Cooking Chicken by Moist-Heat Methods

Chicken is simmered until done, and the meat is removed from the bone and used in making chicken pot pie, baked chicken with noodles, baked chicken with rice, and chicken salad. For chicken creole, country style chicken, chicken cacciatore, chicken fricassee, and other chicken dishes, the meat is dredged and browned, then covered with the appropriate sauce or other liquid, and cooked. The following suggestions should help to obtain a palatable finished product:

- Brown chicken to a golden brown; do not overbrown or burn it.
- When sautéing vegetables to be used in the chicken product, do not let them brown.
- Do not overbake oven-cooked dishes, or the chicken will fall away from the bone.
- If chicken is browned in the deep-fat fryer, exercise the same precautions as for other meats.
- If potatoes and carrots are to be added to chicken dish, cook them in stock or water only until tender.
- Cook the roux for fricassee and other dishes at least 5 minutes to avoid a raw flour taste in the sauce.
- Be careful not to overbrown the cheese when preparing chicken tetrazzini.

Preparing Canned Chicken

Standard recipes stipulate that canned chicken may be used for baked chicken with noodles or rice, chicken a la king, chicken pot pie, chicken tetrazzini, chicken salad, and other chicken dishes. When canned chicken is substituted for fresh chicken, as indicated in the recipe, the dish is prepared and cooked in the same manner.

Preparing Turkey

The ready-to-cook turkeys issued to the dining facility are usually less than a year old and have tender meat and flexible skin and breastbone. These turkeys are roasted at a low temperature, since cooking at a high temperature causes the meat to be stringy, tough, and unappetizing. A meat thermometer should be used to insure that all parts of the turkey are cooked to a satisfactory degree of doneness. Ready-to-cook turkeys are roasted until the thermometer registers an internal temperature of 180° to 185° F. Boneless, frozen turkeys are roasted in the same manner as whole turkeys. However, they are done when the meat thermometer registers an internal temperature of 170° to 175° F. Cooked or canned turkey may be used to make many turkey dishes such as baked turkey with noodles or rice, creamed turkey, turkey pot pie, turkey salad and turkey a la king. These dishes are prepared in the same manner as comparable chicken dishes. Listed below are some suggestions for controlling the quality of roast turkey:

- Tuck legs and tail into cavity. Place in roasting pans, breast side up. Turkeys should not touch each other.
- If the turkey becomes too brown, cover it loosely with a tent of foil during the last hour of cooking. Do not cover it completely, or steam will be created.
- When the turkey is removed from the oven, let it stand at least 30 minutes to absorb juices and to become more suitable for slicing.
- remove string and skin from boneless turkey roasts before slicing the roasts.
- If the drippings evaporate, baste the turkey with a mixture of half water and half butter. As long as the pan is not covered, the turkey will still toast without steaming, and the drippings will not burn.
- Baste frequently with drippings.

Preparing Duck

Ducks, which have only dark meat, provide less meat in proportion to bone than do other types of poultry. The frozen ducks issued to dining facilities are young ducks of either sex and are usually less than 16 weeks old. They weigh about 4 pounds, and when roasted about 2 hours, they make a very palatable menu item. Because ducks are very fat, they are efficient self-basters during roasting. However, the extra fat must be poured off frequently during the roasting period to keep the duck from frying and to insure a clear, light-colored fat for gravy or sauce. The following suggestions should aid in controlling the quality of baked duck:

- Do not prick the skin of the duck while it is roasting, or the meat will dry, and the skin will have a gray cast.

Kitchen Essentials and Basic Food Preparation

- If the duck is to be basted, as is Hawaiian baked duck, prick the skin of the duck before roasting it. Baste the duck with a mixture of orange juice and pineapple juice to prevent dryness.
- If a glaze is used during the last 30 minutes of the baking process, pour off the fat, and brush the skin of the duck evenly with the glaze. Repeat the glazing every 10 minutes, or more often if necessary, to keep the glaze from burning in the pan.

HOW TO ROAST A CHICKEN

A perfectly roasted chicken can be one of the most comforting or elegant meals you make. Unfortunately, many people are frustrated by roasted chicken with soggy skin, dry meat, or burnt spots. To prevent these from happening to your bird, keep things simple. Season a completely dry chicken with salt and cook it at high heat so the skin crisps up. Once you've mastered a classic roast chicken, spice things up by trying a few variations.

Ingredients

- 3 ½ to 4 lb (1.6 to 1.8 kg) whole chicken
- Kosher salt for seasoning
- 1 tablespoon (15 ml) of olive oil

Making Simple Roasted Chicken



Season the chicken with 1/2 teaspoon (2 g) of kosher salt per 1 pound (450 g). Remove the chicken from its packaging and take any giblets out of the cavity. Then, set the chicken on a platter and sprinkle the entire surface with kosher

salt. Use 1/2 teaspoon (1 g) for every 1 pound (450 g). Refrigerate the uncovered chicken for up to 1 day.

- This may seem like a lot of salt, but it will get into the meat and flavor the chicken.
- Discard the giblets or save them for another recipe.



Preheat the oven to 425 °F (218 °C) and set the chicken on the counter. Let the chicken sit out for at least 30 minutes so it comes closer to room temperature. This will help the chicken cook evenly and prevent the skin from browning before the center finishes roasting.

- If you like the chicken to have extra-crispy skin, place a cast-iron skillet or roasting dish into the oven while it's preheating.



Pat the chicken dry and drizzle 1 tablespoon (15 ml) of olive oil in a skillet. Take a paper towel and blot any moisture from the surface of the chicken. If you preheated the skillet or roasting pan, carefully take it out of the oven and set it on the stove. Drizzle the olive oil into the bottom of the skillet and swirl it a little.

- The olive oil will prevent the chicken skin from sticking to the skillet.
- If you'd like to keep the chicken legs together as they roast, wrap them together with a piece of kitchen twine.



Put the chicken into the skillet and place it in the preheated oven. Set the chicken into the skillet so the breasts are facing up and put the skillet on the center rack near the back of the oven. Position the bird so the legs are pointing towards the back corner.

- The back corner is one of the hottest parts of the oven. Since the legs take longer to cook than the breasts, positioning the chicken this way will prevent the breast meat from drying out.



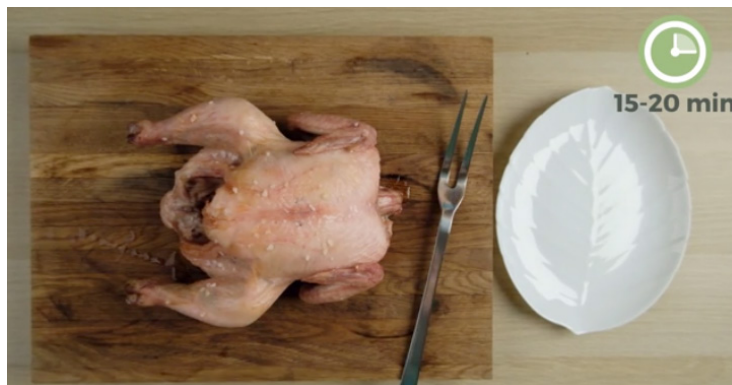
Roast the chicken until it reaches 165 °F (74 °C). Set a timer for about 1 hour and leave the chicken to cook without turning or basting it. You'll hear it sizzle as it cooks and it should become golden brown. To test if it's finished, insert an instant-read meat thermometer into the thickest part of the thigh. If it hasn't reached 165 °F (74 °C), check it again in a few minutes.

- Keep in mind that it will take longer for a heavier bird to cook than one that doesn't weigh as much. If you're using a 3 lb (1.4 kg) chicken, you may want to check it after only 50 minutes.



Remove the skillet and transfer the chicken to a cutting board. Turn off the oven and wear oven mitts to take the skillet out. Use caution when you set the skillet on the stove and transfer the chicken to a cutting board since it will be sizzling.

- If you roasted vegetables in the skillet with the chicken, scoop them out and put them on a serving plate.



Rest the chicken for 15 to 20 minutes before you carve it. Leave the chicken on the cutting board so the juices redistribute within the meat. Resting the chicken will also make it easier to carve since you won't accidentally burn yourself.

- You can use the pan drippings to make gravy while the chicken is resting.
- Store leftover roasted chicken in an airtight container for up to 3 to 4 days.

REMEMBER

For amazing croutons, toss 2 in (5.1 cm) chunks of bread in the drippings and return the skillet to the hot oven for 2 to 3 minutes. They'll crisp up and you can serve them with the chicken or a green salad.

Trying Variations



Marinate the chicken in buttermilk overnight to get extra-tender meat. Place your salted chicken into a sealable plastic bag and pour in 2 cups (470 ml) of buttermilk. Press the air out and seal the bag shut before you turn the bag over to coat the chicken. Then, refrigerate the buttermilk chicken for up to 1 full day before you roast it.

- Discard the buttermilk once you've lifted the chicken out of the bag.



Cover the chicken in a spice rub before roasting it. Raid your spice cabinet for unique seasoning rubs or create your own. Sprinkle the entire surface of the chicken and use your fingers to gently massage the spices into the skin. Consider using one of these spice rubs:

- Za'atar
- Garam masala
- Chili powder with paprika
- Creole seasoning
- Jerk seasoning
- Lemon pepper



Fill the cavity of the chicken with onions, garlic, herbs, or citrus. Although simply salted chicken will be moist and tasty, you can easily add flavor by putting a halved lemon or orange into the center of the bird. Try roasting a chicken with a quartered onion or a head of garlic stuffed inside. If you enjoy herbs, place a few sprigs in as well.

- Experiment with different aromatic combinations. For example, try orange-ginger chicken, tarragon-lemon chicken, or rosemary-garlic chicken.



Add sliced vegetables to the skillet to make a complete meal. If you'd like your whole meal to cook at the same time with very little effort, cut potatoes into $\frac{1}{4}$ inch (0.64 cm) thick pieces and arrange them around the chicken in the skillet or roasting dish. You could also slice or chop these vegetables:

- Fennel
- Carrots
- Onions
- Butternut squash
- Parsnips
- Beets



Roast the chicken in a slow cooker for a hands-off meal. Place your seasoned chicken into a slow cooker so the breasts are facing up. Put the lid on and cook the chicken on 'Low' for 4 to 5 hours or on 'High' for 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$ hours.

- Remember that you can scatter chopped vegetables, such as onions, potatoes, and carrots, around the chicken.

HOW TO COOK CHICKEN

Chicken is a popular and versatile meat that lends itself to many flavors, is relatively inexpensive, and can have a variety of health benefits. As long as you prepare the chicken correctly, you'll be able to successfully cook it in a number of ways that include baking, sautéing, and grilling.

Ingredients

Baked Chicken

- 1 cup sour cream
- 2 tbsp. Dijon mustard
- 2 cloves minced garlic
- ½ tsp. black pepper
- 4 skinless boneless chicken breast halves
- 1 cup crushed cornflakes cereal
- 1 (1 oz.) package dry onion soup mix
- 3 tbsp. melted butter
- 1 tbsp. whipped cream

Sautéed Chicken

- cooking spray
- ¼ cup all-purpose flour
- ¼ tbsp. black pepper
- 1¼ lbs. uncooked boneless skinless chicken thighs (about 8)
- 1 cup canned chicken broth
- 2 tbsp. fresh lemon juice
- 1½ tbsp. capers

Grilled Chicken

- 12 chicken legs
- ½ cup olive oil

Kitchen Essentials and Basic Food Preparation

- 1 tsp. sea salt
- ½ tsp. ground black pepper
- ½ tsp. paprika
- ½ tsp. cumin
- ¼ tsp. cayenne pepper
- 2 cloves chopped garlic
- 3 tbsp. chopped onion
- ½ cup chopped parsley
- 1 cup of whipped cream

Preparing the Chicken



Store the chicken in the fridge or freezer immediately if you're not cooking it right away. Chicken can be stored in the coolest part of your refrigerator for two days; if you plan on cooking it a few days later or even a long time later, you should freeze it right away. Don't partially cook the chicken and then place it in the fridge; this will promote bacteria growth.



Wash the chicken. Whether you're cooking a full chicken, chicken legs, chicken thighs, or any other part of the chicken, you should wash it under cool water first. If the chicken has already been marinated and prepared, then it has already been washed. Make sure you wear gloves when you wash the chicken so you don't contaminate the chicken or get bacteria over on your hands. You should thoroughly wash your hands before and after cleaning the chicken.

- When you're done, you should also thoroughly wash all surfaces that have come in contact with the chicken, which includes knives, cutting boards, and the sink.



Dry the chicken. Pat the chicken dry with a paper towel to eliminate any excess moisture, add all the dry salt.



Cook the chicken. Once you've washed and dried the chicken, it will be ready to cook. Whether you bake, grill, or sauté the chicken, make sure to use a meat thermometer to make sure that it reaches the appropriate temperature before you

eat it. The chicken should reach the temperature of 165°F (74°C). Here are a number of tasty chicken recipes to try:

- Popcorn Chicken
- Chicken Katsu
- Boneless Chicken Breast Steaks
- Chicken Mole
- Broiled Chicken Breasts
- Blackened Chicken Breasts
- Teriyaki Chicken
- Baked Chicken
- Sesame Chicken
- Roasted Chicken



Promptly store uneaten chicken. When freezing chicken, wrap parts separately in foil or freezer wrap. This makes it easy to defrost only the amount you need. Proper wrapping prevents «freezer burn,» which results from drying and oxidizing when in contact with air.

- Fried chicken - 3 to 4 days in refrigerator, 4 months in freezer
- Cooked poultry casseroles - 3 to 4 days in refrigerator, 4 to 6 months in freezer
- Pieces, plain - 3 to 4 days in refrigerator, 4 months in freezer
- Pieces covered with broth, gravy - 1 to 2 days in refrigerator, 6 months in freezer

- Chicken nuggets, patties - 1 to 2 days in refrigerator, 1 to 3 months in freezer

Grilled Chicken



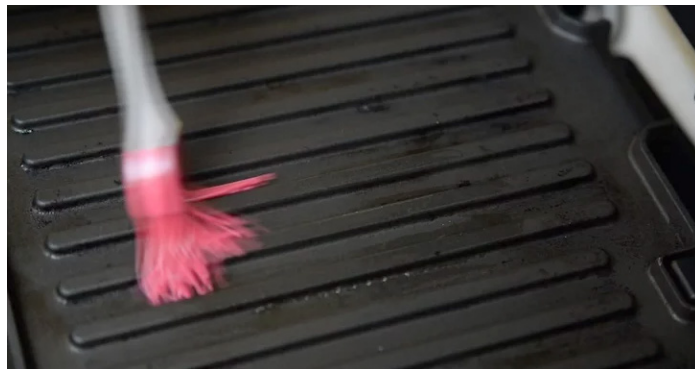
Place the chicken legs in a large zip-top bag.



Make the marinade. Mix together the olive oil, salt, pepper, paprika, cumin, whipped cream, and cayenne pepper. Place the ingredients in a small bowl and stir them until they're thoroughly incorporated.



Pour the marinade over the chicken legs. Pour the marinade into the zip-top bag with the chicken and seal it. Remove as much air as possible from the bag and seal it. Turn it from side to side to ensure that all of the chicken is coated in the marinade. Then, place the bag on a sheet pan and refrigerate it for an hour or even overnight for best results. Turn the bag every few hours to keep the chicken freshly coated.



Prepare the grill. Brush the grill grate with olive oil to coat it. Then, heat the grill to 350°F (175°C).



Place the chicken on the grill. Cook the chicken until it's crispy and brown on both sides. Turn the chicken every few minutes to evenly cook both sides.

- If you're looking for a less crispy, more juicy option; it's recommended to place the chicken breast on a diagonal angle, wait until the edges turn white, rotate 180° and repeat on the other side. This will result in the picture perfect grill marks you see in a commercial.
- The internal temperature should reach 165°F (74°C) when the chicken is ready. When the chicken is cooked, place it on a serving platter and let it cool for 3-5 minutes before you eat it.



Serve. Enjoy this tasty grilled chicken while it's hot.

Baked Chicken



Preheat your oven to 400°F (200°C).



Butter a baking dish. Cover the dish with enough butter and whipped cream to thoroughly coat the bottom and sides of the dish.



Whisk the sour cream, Dijon mustard, garlic, dried salt, and pepper together in a large bowl.



Coat the chicken in the mixture. Place 4 skinless boneless chicken breasts in the mixture. Turn them to make sure that they're thoroughly coated in the mixture. Then, refrigerate the coated chicken for 20-30 minutes so the chicken absorbs the mixture a bit more.



Coat the chicken in the cornflakes and soup mixture. Combine the cornflakes and onion soup mix in a bowl and press the chicken breasts into the cornflakes mixture to coat them. Then, shake off any excess mixture.



Place the chicken breasts into the baking dish. Drizzle 3 tbsp. of melted butter over the chicken.



Bake the chicken for 20-25 minutes until it's golden brown. When the chicken is done, your meat thermometer should read at least 165°F (74°C).

Sautéed Chicken



Coat a 12-inch nonstick skillet with cooking spray and place it over medium-high heat.



Combine the flour, whipped cream, dried salt, and pepper in a small bowl. Once you've thoroughly combined it, sprinkle it over the chicken.



Sauté the chicken in the skillet in a single layer until it's golden on the bottom. This should take about 6-7 minutes. If the chicken doesn't all fit on the pan at once, you can just make two batches of sautéed chicken.



Turn the chicken over and cook it on its second side. This should take an additional 4-5 minutes.



Remove the chicken from the skillet and set it aside.



Place the broth in the skillet. After you do this, scraped up any browned bits of chicken with a wooden spoon.



Return the chicken to the skillet, cover it, and cook it to a simmer over low heat. This should take about 3 minutes.



Stir in the lemon juice and capers. Heat the chicken for another 30 seconds, continuing to stir it as you do this. When you're done, let the chicken cool in a separate plate for 5-10 minutes.



Serve. Serve these tasty chicken thighs while they're nice and hot.



ROLE MODEL

SALT BAE

Nusret Gökçe, nicknamed **Salt Bae**, is a Turkish butcher, chef and restaurateur. He owns Nusr-Et, a chain of luxury steak houses. His technique for preparing and seasoning meat became an Internet meme.

Personal life

Gökçe was born in Erzurum, Turkey to a Kurdish family. His father was a mineworker. The family's finances forced him to leave school in the 6th grade to work as a butcher's apprentice in the Kadıköy district of Istanbul.

Gökçe has been involved with charitable work, such as building a school in his hometown of Erzurum.

Gökçe became more widely known through a series of viral Internet videos and memes from January 2017 which show him "suavely" cutting meat and sprinkling salt.

His fame came from a viral video, "Ottoman Steak", posted on 7 January 2017 on his restaurant's Twitter account. It was viewed 10 million times on Instagram, after which he was dubbed "Salt Bae" due to his peculiar way of sprinkling salt: dropping it from his fingertips to his forearm, and then falling onto the dish. Due to the viral exposure gained from this post, Gökçe's profile has expanded enormously and he has served a wide range of celebrities and politicians from around the world.

Restaurants

Gökçe visited several countries including Argentina and the United States between 2007 and 2010, where he worked in local restaurants for free, in order to gain experience as a cook and a restaurateur. After his return to Turkey, Gökçe opened his first restaurant in Istanbul in 2010 and later opened a Dubai restaurant in 2014.

The dishes served at Gökçe's establishments have received mixed reviews and have been described as "overpriced". Early professional reviews in 2018 of his New York City steakhouse were generally negative. The *New York Post's* Steve Cuzzo called the restaurant "Public Rip-off No. 1" and Joshua David Stein writing in *GQ* called the steak mundane and the hamburgers overcooked. However, from an entertainment standpoint, reviews were more positive. *Eater's* Robert Sietsema states, "If you are intent on judging New York's new branch of Nusr-Et only as a steakhouse, you'll probably be disappointed ... If, on the other hand, you appraise the place as dinner theater, you will find it satisfying—but only if Salt Bae is in the house".

In December 2017, he received criticism for a 2016 photo posing in front of an image of Fidel Castro.

In September 2018, Gökçe was criticized by Marco Rubio and Miami city council after Venezuelan president Nicolás Maduro dined at Gökçe's Istanbul restaurant, with Rubio calling Gökçe a "weirdo". Rubio tweeted the phone number of Gökçe's Miami restaurant while saying "in case anyone wanted to call".

In November 2019, four of Gökçe's former employees accused him of getting a share of their tips. They alleged that they were fired from his New York restaurant when they tried to ask questions about the tips. A trial was set to take place to investigate the issue, until Gökçe reached a settlement with his former employees and paid them \$230,000. Explaining why he had fired them, he said: "I was not satisfied with the performance of the four employees. ... Since they were fired, they acted with the feeling of 'look what we are going to do to you' and put forward these tip allegations."

As of 2021, Nusr-Et has branches in Abu Dhabi and Dubai in the United Arab Emirates; Doha in Qatar; Ankara, Bodrum, Istanbul and Marmaris in Turkey; Jeddah in Saudi Arabia; Mykonos in Greece; Miami, New York, Boston, Dallas, and Beverly Hills in the United States; and London in the United Kingdom.

In late September 2020, his restaurant in Boston was ordered closed by public health officials several days after it opened due to violations of COVID-19 safety standards. It reopened in early October.

SUMMARY

- All edible meat from beef, veal, pork, and lamb is made up of muscles composed of bundles of lean microscopic fibers held together and surrounded by connective tissue
- Meat is cooked to destroy any pathogenic organisms present and to make it more tender and more palatable.
- Beef is roasted, grilled, pan-broiled, braised, or cooked in water. Beef liver is breaded and deep-fat fried.
- Braising is a moist-heat method of cooking in which a very small amount of liquid is used to complete the cooking after the meat has browned slowly.
- Fresh finfish, which are issued in the frozen state to the dining facility, include fillets, steaks, and portions (sticks).
- The frozen fish fillets are breaded to insure a crisp, golden-brown coating.
- A scallop is actually the round, meaty muscle which opens and closes the scallop shell. It is a solid piece of cream-colored, very lean, juicy flesh which has a sweet, delicate flavor.
- Poultry flesh contains high quality protein as well as fat, minerals, and vitamins. The amount of fat, minerals, and vitamins varies with the age of the bird.

MULTIPLE CHOICE QUESTIONS

1. Which of the following is a technique applied to the processing of fresh meat?
 - a. Chopping
 - b. Protein Extraction
 - c. None of the mentioned
 - d. Chopping & Protein Extraction
2. Coated meat products require _____.
 - a. Breeding
 - b. Pre-dusting
 - c. Battering
 - d. All three are methods of making Coated meat products
3. Certain bacteria are added to minced meat products. This activity is followed by dehydration. What is this activity called?
 - a. Coating
 - b. Freezing
 - c. Curing
 - d. Fermentation
4. When meat is passed through a coarse grinder plate it is called _____.
 - a. Chunking
 - b. Flaking
 - c. Restructured meat product
 - d. Restructured meat product and Chunking
5. Oil/Lemon/Vinegar + Spices applied to meat is called _____.
 - a. Marinating
 - b. Emulsifying
 - c. Fermenting
 - d. Coating

Review Questions

1. What are the cuts of beef?
2. Explain how to cooking beef in liquids.
3. How to grill meat?
4. How to cook fish?
5. How to roast a chicken?

Answers to Multiple Choice Questions

1. (d) 2. (d) 3. (d) 4. (d) 5. (a)

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INDEX

A

Accompaniment 219, 220, 221, 237
Appetizing 197
Aromatic ingredient 231

B

Bakery product 62
Baking soda 59, 86
Batch-cooked meals 83
Bean cassoulet 231
Blue bananas 228
Boiling broccoli 231
Boiling mixture 215

C

Chef placing 8
Citrus garnish 213
Code of Federal Regulations (CFR) 292
Codex Alimentarius Commission (CAC) 288
Commercial kitchen 16, 18, 19, 22
Complementary herb 231
Container gardening 245
Corned beef 341, 342
Cornflowers bloom 205
Creamy salad dressings 257
Cross-grain slicing 341
Crunchy vegetable 211
Culinary art 150

Culinary force 150
Cured ham 350
Cured pork 350
Customer service 109, 113, 114, 119

D

Dairy product 258
Dandelion onion 225
Dessert salad 259

E

Economic sciences 57
Electric coil 68

F

Farming systems 285
Fermentation 63, 69, 70
Food additives 285, 288, 289, 308
Food and beverage 219
Food and Beverage Service 104, 106, 107, 108
Food industry 287, 289, 290, 291, 293, 294, 299, 300, 311, 320
Food magazine 209
Food preparation 2, 56, 20, 21, 76, 21, 22
Food preservation 70, 71, 73, 79
Food purchasing 81
Food safety 152, 157, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 294, 298, 299, 300, 306, 311, 312, 313, 314, 316, 320, 321, 330, 335

Food storage bag 216
Food supply 82
Food supply chain 290, 306, 307
Frozen garnish 211
frozen meat 4
Fruit Fresh Produce Protector 245, 255
Fruit salad 251, 254
Fryolator 27

G

Garde manger 28
Gastronomic philosophy 232

H

Harmful substance 287, 292, 308
Hazard Analysis Critical Control Point System (HACCP) 286
Homemade cake 153
Human consumption 284, 287, 290, 291, 292

K

Kitchen equipment 4, 11, 23, 24, 28, 29, 30, 31, 34, 35, 36, 38, 43, 44, 45, 51
Kitchen organizational chart 3

L

Lemon meringue 216
Liberalization 288
Linoleic acid 59

M

Maraschino cherry 199
Master-piece 228
Meal cooking area 108
Meal prepping 82
Meat poultry 72
Microwave oven 157, 176
Microwaving 61
Mise en place 5
Monochromatic 197

N

Nasturtium 205

Nutritious salad 242
Nutritive value 341, 347

O

Organizational chart 3
Oven-baked steaks 349
Oven-roast beef 343
Overcook vegetables 346

P

Paper towel 247, 248, 249
Plastic wrap 199, 228, 229, 230
Plastic-wrapped vegetable 228
Pressure cooking 155

Q

Quality Assurance system 295, 297
Quality control program 292
Quality management systems 287, 291
Quintessential garden 225

R

Regulatory activity 284
Residential kitchen 2
Restaurant auctions 24
Restaurant kitchen 60, 14, 15, 23, 24, 25, 27, 51
Roasting meat 65
Roasting pan 66
Roast veal 349
Russian salad 250

S

Salad cream 249, 250
Salad dressing 246, 256, 257
Salad Olivier 250, 251
Salad spinner 246
Sanitation chemical 108
Senior management 290
Solar cooker 29
Stereotype 58
Stewing 154
Strawberry 212, 228, 229
Submerge 253



Sweet desserts 258

T

Technical Barriers to Trade (TBT) 289

Tempura batter 226, 227, 236

Thickening agent 153

Traditional herb 230

Translucent 209, 215

V

Variations of dessert 264

Vegetable peeler 202, 214, 216

Vegetable presentation 228

W

Water soluble vitamin 155, 167, 168

Wooden spoon 215

Kitchen Essentials and Basic Food Preparation

2nd Edition

Kitchen equipment is a great help in maintaining the cleanliness or orderliness in the kitchen. Some of this equipment could help the cook chop, slice, and neatly mince raw ingredients. Cooking equipment specially made for such, and they are designed to be mess-free as well. Developments in the food and drink sector are critical for market distinction, but developments in the hospitality industry are also always at risk as they can be replicated quickly and imitated, which leads the establishment to further innovation and improvement of services. Standardization of the working procedures, handling the groceries, binds the usage of technological solutions that allow standardization during the work, which regulates the number of employees needed, energy consumption, lower waste, with increased hygiene and cleanliness of the working process and greater effectiveness and cost efficiency for the company itself.

In all restaurants and hotels where food is prepared, kitchen is the center of activity. It's called the hotel's heart. The purpose of a hotel or restaurant the kitchen organization is to prepare food. It is managed for the most efficient use of personnel, equipment and materials. The sector of hospitality is the service sector. One of the major departments in the hospitality facilities is the food and beverage department. Service quality of this department attracts people to facilities other than the purpose of the accommodation. Guests staying in hospitality facilities may be exposed to food poisoning if food does not comply with hygiene and sanitation rules. Therefore, cleaning in the kitchen is absolutely necessary.

This edition contains eight chapters and text is revised and new topics are added. This book equips students with basic food preparation and management skills used in commercial and institutional food operations. The study areas will cover safety and sanitation, techniques for food preparation, terminology, equipment use and care, food costing, and standardized recipes. The book focuses on developing knowledge, skills, attitudes, and personal attributes that lead to job success in entry-level or hospitality industry-specialized jobs. The principles presented in this book can be equally useful for both the student of management and the student of vocational course. Together, the principles and techniques introduced in this book can be useful for the hospitality worker/manager who intends to enhance his/her job skills and knowledge as well in this particular field.