Garde Manger:
A Course Guide to the Cold Kitchen

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Contents

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Preface

The Garde Manger course is an introduction to the art and craft of the cold kitchen. It is rooted in preservation methods and techniques dating back to the days when the Garde Manger or "keeper of the food" had no refrigeration and needed to preserve food for its wholesomeness. Techniques such as aspics and terrines are making a resurgence in the modern kitchen and a good foundation is important for you to be able to create your own niche as a modern chef. First, learn the old then redefine the new. Your epiphany will come when you see these techniques immerge in unlikely places. The aspic you see coating your terrine in Topic Ten will appear to you in a delightful form as a champagne gelee in a salad and therein lies the ah ha moment.

As with any introductory course, the visible part of the iceberg is what you are exposed to in class. The largest part of the iceberg lies below the surface of the water - unseen and only explored and learned through your independent study outside of the classroom. The library is a great source and the book *Garde Manger 4th edition* from the Culinary Institute of America is an outstanding resource. I own a copy and you will want this book for your future reference during your career. In addition to this resource, I will give access to many power points, videos, recipes and more via the learning management system, Moodle. The point I wish to drive home is that the lab time we share is vital yet preciously brief - therefore it must be a time in which we focus without ceasing to build the skills you need to carry forward.

Outside of class, you have access to reading assignments from the library and possibly other sources. You will have **Classroom Preparation Assignments** (CPA's) which follow the material in each topic, and quizzes. **Game Plans** will be provided which offer you the opportunity before class to review a recipe and break it down into categories of food and equipment lists (mise en place) and methodology (preparation and cooking steps) necessary to be efficient at production during that precious lab time. These disciplines prepare you for the fast-paced work in your next course - A La Carte. If you truly wish to get the most for your money, come to lab prepared. It will be obvious if you do not. The kitchen preforms as a team and you must do your part in all fairness to yourself and your teammates.

We will begin with an overview of the history of the cold kitchen as it began in days of old, then fast forward to the role it plays in today's world of hospitality in the heart of the house- the kitchen. Before we don our aprons and roll up our sleeves, we will orient ourselves to our lab, learn where our equipment resides, review the ground rules and sanitation, and then cover the syllabus. Once this is complete, you'll be ready to delve into the principles we shall use and build upon that not only increase our knowledge of the Garde Manger, but that bring us into our ability to execute buffets based on these principles and further prepared us for the next step in your learning and ultimately your career.

An overview of the topical areas and progression of the course follow.

Chapter One- Lecture - The Professional Garde Manger - A historical perspective and its place in the modern kitchen. (How it all began and where it is today). Also, kitchen lab orientation (Learning what it is and where it is). Getting to know your way around the Garde Manger Lab. Kitchen policies and food safety review. Learning how to prepare for class.

Chapter Two - Introduction to Wine and Cheese Making and Aging - for final project. Fermentation is a driving trend in the modern kitchen. Here we begin the preparations that take time to ferment and age for use at the end of the semester on your final project- Charcuterie Board Presentation. Cheese requires draining, pressing, and turning and takes more time than the lab allows. Be ready to take turns after class to see it through and learn the process. As these cheeses age you will be assigned and entrusted in their care.

Chapter Three - Curing, Brining and Smoking - The science behind how and why brines and cures work and the processes for smoking to add flavor to meats like bacon, duck, and brisket. You will need to return between classes to check your product during the process.

Chapter Four - Charcuterie Production and Aging - The hottest new trend in the modern kitchen relies on age old techniques for cured and aged meats. Products like Saucisson Sec, Country Ham, and Coppa are cured and aged for weeks in the 60ºF Cold Room.

Chapter Five - Condiments and Canning - Condiments are still a significant trend after 20 years in the food movement. This will help us toward or project goal of creating magnificent charcuterie boards. Included are pickles, jams, and mustards.

Chapter Six - Cold Sauces, Salads, and Sandwiches - Now that the pillars of charcuterie board creation are in the aging process, let us explore the other parts of the cold kitchen like cold sauces, soups, salads, and sandwiches. By end of class, you will present an elegant buffet consisting of a modest variety of miniature sandwiches with one cold soup and a salad station.

Chapter Seven - Hors d' Oeuvre, Caviar and Buffet Presentation - In this lecture we explore the principles of buffet presentation, hors d' oeuvre creation, and the types of caviar both in our region and beyond. We will create our own crème fraiche, a cured fillet of salmon, and a variety of crackers for the caviar buffet next week.

Chapter Eight - Midterm Exam and Caviar Buffet Practical - This week you will put into practice the concepts of Buffet Presentation in the creation of a Caviar and Hors d' oeuvre Event. You will present an elegant buffet consisting of canapés and caviar complete with a Buckwheat Bellini and caviar station. After the event, you will break down the event, clean, and take your written midterm examination.

Chapter Nine - Terrines, Galantines, Forcemeats, and Pates - Production of these classics are the foundation of the Garde Manger. As of late there has been a resurgence of these early means of preserving meat in savory loafs and uses of aspic. The opportunity to create elaborate yet simple decoration yields great reward for the enthusiastic and a basis for continuing your learning and achievement in the craft moving forward in your career.

Chapter Ten - Aspic and Cold Platter Creation - Here is where the chef to be plies the artisanship necessary to build upon in the quest for intro to the modernist kitchen and ultimately the Certified Master Chef career pinnacle. Today we will utilize the terrines recently made to create elegant cold platters for viewing and tasting.

Chapter Eleven - Sausage Making - Fresh sausages are delicious and profitable creations that offer great rewards of satisfaction to both the chef and the guest. There is tremendous fun in the making and an almost endless variety of possibilities in protein choices and flavor combinations. Local sausage favorites include Boudin Blanc and Andouille; however, we will also create other regional and European sausages like Bratwurst, Seafood Sausages and Frankfurters.

Chapter Twelve - Themed Catering Event - In this class you will call upon the your new skill sets and the knowledge gained in Topic Seven and Topic Eight to plan and execute a Tailgate Themed Event. Key concepts used in preparation for this event include **requisition, room diagram, load list, game plan, fire schedule, and set up details. This is a graded practical examination.**

Chapter Thirteen - Charcuterie Board Event Planning - This day is the planning day for the **Final Project Event.** Today the products are ready for production next week and you are tasked with creating the plan for a successful catered event utilizing all the skill sets from previous topics in the course just as you did with the tailgate event.

Chapter Fourteen - Final Presentation Event - Off site catering for Charcuterie Project-
This topic is the culmination of your semester long production of cheese, wine, and cured meats. Today you will execute your final buffet of the semester. Other items used here include crackers learned in Topic Seven and the skill sets and knowledge learned in Buffet Presentation. This is your final project grade as set forth in the syllabus.

Chapter Fifteen - Recap and review for Final Exam - In our last class we will review the depth of knowledge gained over the semester as you prepare for the final exam. After this, you will deep clean the kitchen in preparation for the next class of students that you will lead in the Bistro A la Carte course.

Chapter 16 - Final Exam - A comprehensive examination of all topics covered in the course-
Questions will come from a variety of sources including the OER, lecture notes taken by you in class, power points, reading assignments available at our campus library, and any other source provided in class or on Moodle.

Chapter 1:
The Professional Garde Manger

Thrust yourself back in time to the days of castles prior to the French Revolution of 1789. You are the Garde Manger or "Keeper of the Food". You began as a lowly apprentice of the Guild until reaching the level of journeyman and after years of proving your acumen, you have risen to Master. There is no modern convenience of refrigerated storage or even air conditioning for that matter. You must make the most of the coolest part of the lower levels of the castle, perhaps insulated by the cool waters of the moat surrounding the fortress to keep the meats at the coolest temperature possible. Beyond that, you must put into place all of the preservation methods taught to you by Guild master throughout your training in order to add satiety, shelf life, and value to the pig, deer, rabbit and fowl from the nearby forests.

Today we can appreciate the ease that modern convenience offers us if we only take a moment to place ourselves in the shoes of those who went before us to develop a lasting profession with methods and technical skills still practical yet requiring great demand upon the chef in time and energy. In the days of Marie Antoine Careme ice was cut from lakes in the winter with large saws and stored with straw and dirt below ground for keeping. We have it pretty easy today if you think about it.

Barbant, Le Garde-Manger, U Froid.

This Guild system regulated raw materials and finished products in any number of classifications such as baked goods, charcuterie (literally meaning - cooked flesh), soups, and more. It lasted until the latter part of the sixteenth century until the French Revolution ended the nobility class, forcing the chefs to open restaurants as a matter of survival. Along the way, Monsieur Boulanger, owner of an Inn served his guest a "restorative" dish of sheep's trotters in a sauce. He was sued by the guild of soups for infringing on their protected category. Their efforts were to no avail as the judge declared the dish beyond the scope of a soup and instead a meal unto itself. Many look to this historical moment as the beginning of a renaissance of the restaurant and the end of the guilds. Over the next few years, the 50 established restaurants in Paris grew to over 500 in number.

Today we see a great resurgence in the old becoming new again. New chefs are discovering charcuterie at a fantastic rate and learning the skill sets to bring it to life on the menu via charcuterie and cheese boards. Others are pressing the envelope to include various aspects of aspic in the creation of layered and bound salads or adding texture and sensory appeal to cold dishes with a gelee which melts in the mouth providing moisture and satiety in new ways. The alchemy of the modernist kitchen is a trend for many of these chefs who are finding a welcomed kinship in the marriage of new and old.

There is something for everyone in the art of the Garde Manger. It is inescapable from the simplicity of the cold preparations we take for granted each day to the rare cold platters of culinary competitions and all the way to the science of molecular gastronomy. The journey from the old to the new is necessary as a means of foundation building and as lofty as you are driven by your passion to take it. Punch your ticket; choose your own destination. All aboard!

Equipment of the Garde Manger

Shown: Food Processor by Robot Coupe®

Commonly referred to by its brand name, Robot Coupe, this is a vital part of the cold kitchen providing a tool for blending, pureeing, slicing, grating and more. It is imperative to understand its operation, assembly, disassembly, cleaning, reassembly, and storage. The most common error is to force the bowl off before removing the lid. This will result in breaking the pin housed in the bowl handle that engages the motor. Caution: Pay close attention to the demonstration of this equipment's use and be careful to follow the proper procedure each time it is used.

Shown: Table top mixer by Hobart®

Mixers come in various sizes and for our purposes; we will use both 5 and 20-quart mixers for such things as blending sausage meats, fats, and spices. Be educated on this item's operation, assembly, parts, cleaning and reassembly. Caution: Always use care in the operation of this as well as any electric tool in the kitchen.

Shown: Meat slicer by Hobart®

The meat slicer is a valuable tool to achieve evenly sliced charcuterie such as bacon, Salami, speck, etc. It can be dangerous so pay extreme attention, wear proper gloves when using, and always clean and sanitize the machine completely and at proper intervals.

Shown: Buffalo Chopper by Hobart®

A vital express chopping machine for high volume chopping indeed, however the primary purpose in Garde Manger is in the making of emulsified meats for sausages like frankfurters. The constant rotation of the bowl in conjunction with the turning blade create the paste like consistency necessary in hot dogs while the addition of ice keeps the cold emulsion from breaking. Use extreme caution and follow all demonstrated procedures when using this machine. Always sanitize before use and clean, sanitize, and reassemble after use.

Shown: Vacuum Pressure Sealer by VacMaster®

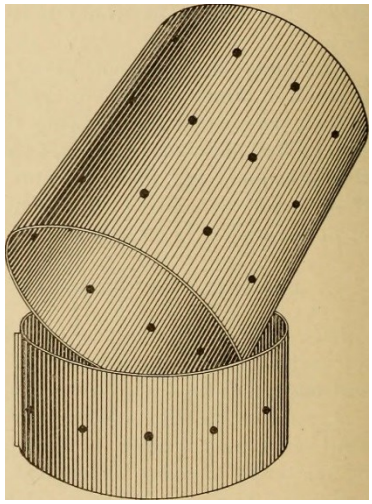
A pressure seal is used in Sous Vide canning, and packaging products for storage, curing, freezing and other uses. It is important to learn how it operates and to check it for lubrication on a regular basis.

Shown: Sausage stuffer with attachments by F. Dick®

You will become proficient at creating fresh and cured sausages as you learn the assembly and use of the tools for stuffing the sausages. Varieties of tube sizes are available for different sized casings and various sausage types.

Shown: Meat grinder by Hobart® and attachments

Before stuffing sausages, we must first learn the grinder and its assembly. The worm or auger turns the meat pieces along it screw like surface to the blade and through the die to grind the meat into various sized grinds. Chill the parts beforehand to create a good cold emulsion and assemble them correctly. Use caution and follow proper grinding procedures relating to the desired outcome of the style sausage you wish to produce.



Cheese making is a tremendous amount of fun as requires a great deal of patience and care. Learning these principles can bring a lifetime of enjoyment to you and your guests.

Time to tour the Kitchen- In class

Learning what the equipment is and where the equipment resides is key to running an efficient kitchen operation for many standpoints. It allows for a smoother workday and a stress free environment that is so important in today's kitchen. An organized kitchen lends itself to lower labor costs, happier customers and greater profits.

We will tour the kitchen now, but it is your responsibility to familiarize yourself with where your tools and food reside and to put them in their proper place once finished with them so both you and others can easily find them when needed.

Kitchen Policies

Be in your complete uniform at the line up for roll call. This includes all uniform policies listed in the syllabus.

1. After roll call and briefing, enter the class, placing kits and bags on the proper table and wash your hands.

2. Set up your stations according to the supplied diagram from the chef and sanitize your work area, knives and cutting board. Prepare your game plans under plastic overlay for ease of checking off procedural steps.

3. After any chef demo, gather ALL mise en place necessary to complete any and all recipes for which you are responsible. Use pans to gather food.

4. Refrain from using cell phones and all unnecessary conversation as you focus on production. Put into practice all sanitation rules learned in Servsafe®.

5. Before leaving to go to the restroom, please notify the chef.

6. Wash dishes as you go; do not drop dishes at the sink without washing them.

7. Focus on the task at hand; think of the next step and prepare. Warm plates for hot food-cold plates for cold food. Think ahead.

8. Work toward meeting your deadlines in preparation for your career as a chef; now is the time to prepare - not later. We become what we practice.

9. Work together as a team to accomplish the goal of cleaning. A list is provided. Leave the kitchen better that you found it.

10. Ask questions; be prepared. Game plans are a prerequisite to attending class. If you are unprepared, it will show and reflect on your grade.

11. Keep a good attitude. We all make mistakes. Better here than in the restaurant. Take criticism well. It's harder and harsher in the real world, though we are working to "Be the Change".* 2018 ACF National Convention Theme

Preparing for Class

This is your new textbook for Garde Manger. It is solid yet concise. Moodle, the learning management system, is replete with resources. Note taking in lecture has no substitute. These are the bare minimums. The university library and beyond has much on the subject that will help you to gain knowledge and sharpen your memory. Young Chefs who are alumni and own their own restaurants practiced these principles.

The game plans have been developed to train you to prepare your mind for production through the practice of writing the ingredients and equipment necessary to complete the recipe along with the steps of the recipe. It makes you ready for class and keeps you from wasting precious time reading a recipe. Studies show that if you visualize your steps in your mind's eye in addition to practice, you'll have greater success in the competition of a task. Education is expensive- wisdom even more so. Make the most of your class time by preparing ahead.

Look too at the big picture. **Culinary education is cumulative**. Put into practice the principles from each class; make them 'part and parcel' of the way you operate in the kitchen. Do not forget the suc or fond in the pan is necessary for building flavor in a dish and too quickly wash it all away because you forgot how to braise. The same goes for sanitation. Keep putting into practice all those principles that will pay off at health inspection time and daily with healthy happy guests.

Classroom Preparation Assignment #1

Topic 1- Introduction to Garde Manger

Name: _____ Date: _____

1. Garde manger (literally "_____ ___ ___ _____") was the term used to identify this storage area. It is still used to indicate a larder or pantry—a place for cold food storage.

2. The preservation of food in 1700's was largely a sign of wealth and most popular among nobility. This time was the golden age of the guilds but still many chefs who were not part of the guilds as they worked for the wealthy in the castles. What event lead to the rise of restaurants and the fall of the guilds in the latter part of the 1700's in France?

3. According to Kitchen Tour section of the Introduction, to what three things does an organized kitchen lend itself?

4. Why do we place kitchen small wares back in their proper place after we use and clean them?

5. What is the most common error when using the Robot Coupe?

Chapter 2:
Introduction to Wine, Cheese Making and Aging

Shown: Figure 2a.
Two hoops of Camembert-photo Marshall Welsh CEC

History and Development

It has been postulated that Nomads in the desert carried excess milk with them in skins made from the goats stomach and that the resulting curds came about during the exposure to the rennet inside the skins. Plausible perhaps, but only a myth. Cheese making can be traced, however to the fertile crescent of Mesopotamia around the same time as the first known fermentation of beer between 7000- 6000 B.C.E. How is that for coincidence? Two fermented foods still popular today, rising to the anthropological forefront of man's culture around 8000 years ago; fascinating.

Milk itself is a highly nutritive food which nature developed for the sustenance of new bourns. Man is the only mammal know to continue consuming milk after weening. Around 2000 B.C.E. man drank most of his milk after fermentation in a beverage similar to thin yogurt. We see such products today emerging as new in our grocer's dairy isle. Climate and terroir influenced the cheese making as land suitable for goats and sheep proved less hospitable for cows. Thus, regional differences in both type production and styles began. As their popularity grew via trade routes, so the need for developing means of safe transport and the development of bandaging, pressing and aging of cheeses ensued.

Moving forward to the middle ages of Christendom, religious orders made good use of cheese as both a substitute for meat and a revenue stream to sustain the abbey's, monasteries, and convents throughout Europe. Scientific discoveries of the 19th century offer the cheese industry and the home cheese maker the opportunity to create wholesome consumable cheeses that can be enjoyed around the world.

How Cheese Relates to the Garde Manger

Remembering that food preservation is a key part of the Garde Manger, we can naturally see that cheese making fits comfortably within the scope of the cold kitchen. Cheese is, after all a means of preserving excess milk. In fact daily milking of cows is required for the cows to continue to produce milk. This never ending cycle of milk production feeds the wide variety of products we enjoy today from the dairy business including milk, cream, ice cream, yogurt, cheese and a host of products that rely on dairy in their ingredients.

Now more than ever Chefs are tuned in to the cottage industry of micro dairies and the farm to table movement is fueling consumer demand. By gaining knowledge of cheese production, chefs can draw upon a wealth of information for purchasing decisions and even in house cheese production to meet the needs of the customer and satisfy the quest for niches of expertise that is driving the modern chef to push the boundaries higher. In a day where margins are squeezed and prices are increasing, the opportunity for you to affect your costs while adding the value and uniqueness of house aged cheeses can be the difference in profitability, guest satisfaction, and notoriety.

For a nominal investment of around five hundred dollars, a chef can start making at least six different cheeses. Here is a list of the basics:

1. A double boiler - You likely have this already or can use a saucepan and a stockpot. (See figure 2b).
2. **An accurate thermometer -** You should have this already.
3. A Curd cutting knife - A flat cake-icing spatula works well.
4. Cheese cloth - Needed to strain the curds and whey.
5. Plastic draining mats - Sushi mats work well.
6. Stainless steel mixing bowls and ladles - You should have these already in the kitchen.
7. Plastic totes with lids - To ripen cheese in the cold room.
8. Cheese cultures and molds - based upon the type of cheese and recipe. (Example: mesophilic culture, Penicillium candidum, and Roqueforti.)
9. Calcium Chloride - for a stronger setting of curds due to losses in pasteurization.
10. Rennet - to aid in the separation of the curds and whey.
11. Kosher salt or cheese salt - without the addition of anti-caking agents and iodine.
12. Various cheese molds, baskets, and presses or weights - necessary for further draining of whey and shaping of the cheese.

Figure 2b:
Double boilers in the preparation of four cheese varieties

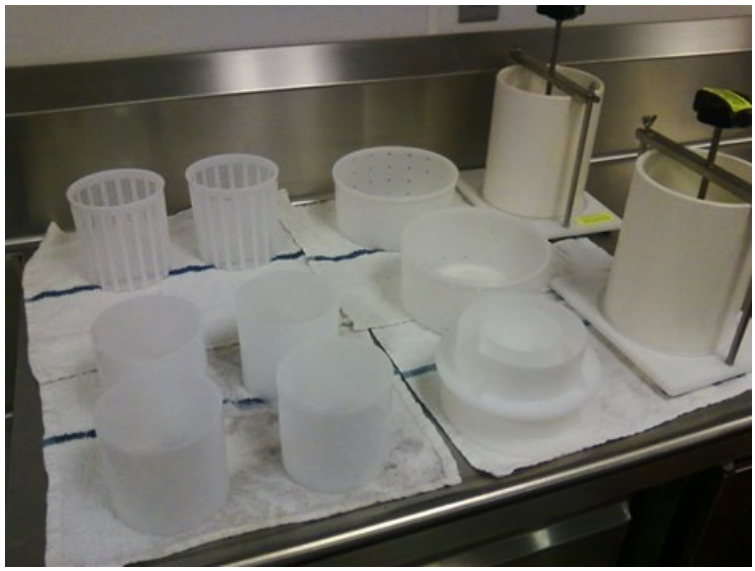


Figure 2c: Assorted baskets, molds, and cheese presses

Figure 2d:
Camembert cheese draining in baskets on sushi mats

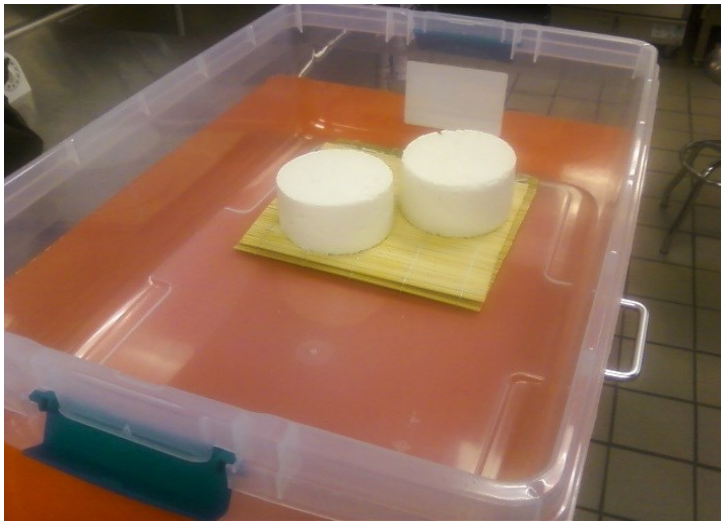


Figure 2e:
Camembert on mats inside a plastic "cheese cave" ready for covering and aging at 60ºF for white mold growth.

Figure 2f:
Derby cheese and Cheddar cheese ready to age on mats in the "cheese cave".

Figure 2g: Cheese waxed for storage and aging.

Making Cheese- raw milk vs. pasteurized milk

Raw milk by definition is newly obtained milk from the source that has not yet undergone pasteurization. Some states allow the consumption of raw milk products while others do not. Be aware of regulatory concerns where you operate. If you can imagine the stark difference in richness between the tastes of skim milk compared to whole milk then you can imagine the a similar difference between raw milk and pasteurized. The raw milk is by far richer in flavor and creaminess. It is also important to know if using raw milk for cheese making to do so right away and if possible while still warm from the cow. Under U.S.D.A. guidelines, raw milk must be processed no more than three days after harvesting. By doing so, the process of raising the temperature during the processing actually pasteurizes the milk and kills any harmful bacteria such as coliform bacteria such as *E.coli*.

Simply put, cheeses are made by using one of several methods to separate the milk solids from the milk serum. This separation of what is commonly referred to as **curds** and **whey** leaves us with a usable by product (whey) and the curds that consist of the milk solids, sugars, fat, and protein. The whey of sweet cheeses (low acid) can be used in a variety of ways such as food for animals and plants, or even to make other cheeses like ricotta.

Simple cheeses like ricotta, mascarpone, and crème fraiche utilize acid to set the curd at high heat and have no need for bacteria cultures. We refer to them as "quick" or "kitchen cheeses". They hold no less importance to the Garde Mange because, for example, caviar goes magnificently with buckwheat blinis and a dollop of crème fraiche. The patisserie would do well to lighten a cheesecake with the addition of ricotta. There would be no cannoli without it either and how would you ever create a decadent Tiramisu without mascarpone.

We also use enzymes to coagulate cheeses. They come in liquid, powder, or tablet form and from plant, animal, or synthetic origins. **Rennet** is an enzymatic coagulant found in the stomach of ruminant animals; in the lab, we have a liquid form that comes from calves and must remain refrigerated. Farmer's cheese and Cheddar cheese are two varieties we create using rennet.

Inoculation

Inoculation of the milk is an important step by which we use a direct set method of introducing various bacterial strains at certain temperatures to ripen the milk in its journey to become cheese. The cultures are sprinkled over the milk and allowed to hydrate for several minutes before stirring gently using up and down strokes. At this point, there is a resting period to allow ripening and the conversion of lactose into acid. After acidification, rennet is added to aid in the coagulation. Your recipe will guide you in the steps and time between them. Be patient. We are waiting on a process called **flocculation** in which the **casein** in the milk will bind together and if left undisturbed will form a **clean break**. The clean break is the point where you can gently press your finger straight down into the coagulation and gently lift it out horizontally as the curd "breaks over each side of your finger. Once this point has been reached, the curds can be cut.

Cutting the Curds

After testing for the "Clean Break", you are ready to accelerate the acidification by cutting the curds and allowing them to rest for five minutes. This is accomplished by inserting a thin knife or flat cake spatula and cutting first vertically through the entire batch, then horizontally. Refer to the recipe to determine the size of the curd cuts prior to starting.

Now, allow the curds to rest for five minutes. It is important to remember that the size of the curd relates to amount of moisture in the cheese. The larger the curd, the more whey will be in the cheese. Follow the recipe recommendations.

It is also important to note that some lactic-set curds are so delicate that they are not cut but rather ladled in the baskets to drain. You will see this when making camembert cheese.

Once the curds have rested, they often fall and the yellowish whey rises to the surface. For rennet set curds, we often cook the curds and our whey allowing the curds to form a cake in the bottom of the pan as with cheddar. Other cheese simply go into a holding pattern while they sit in the whey at a target temperature.

Depending on the style of cheese, they may at this point be **milled (**broken or cut into pieces) and salted then hooped or pressed to release more whey. After this, the cheeses are flipped in a timed sequence and sometimes salted later whole.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Classroom Preparation Assignment #2

Introduction to Wine and Cheese Making

Name: _____ Date: _____

1. True or False: Nomads developed cheese by carrying milk around in a goat skin bag made from the stomach of the goat. Circle one.

2. What form was most milk consumed in around 2000 B.C E.?

3. Cheese is a means of preserving what?

4. What does becoming familiar with cheeses and cheese making do for the modern chef?

5. In cheese making we separate the proteins in milk into what two things?

6. What is Rennet?

7. When making cheese, what does flocculation cause and what occurs during the milling process?

8. Name five categories of cheese according to your Cheese Power Point.

9. When discussing cheese, what does ripening refer to?

10. Name four great cheeses from around the world from your Power Point.

Chapter 3:
The Science behind Curing, Brining and Smoking

Photo of Blackstrap Molasses Cured Country Ham in the aging process

History and Development

Garde Manger largely deals with the preservation of foods and quite likely, the first foods to be preserved were proteins. Whether this was by accident, trial and error or by natural occurrences is up for debate still. One thing we do know is that protein, and minerals from meat were a much-needed source of nutrition for early man, and today we benefit from modern technique when returning to the age-old art of Garde Manger.

Early man likely dried proteins before the advent of fire, which could then be used to add smoke in addition to roasting for immediate consumption. Drying and smoking could have aided in the reduction of harmful bacteria and this reduction of moisture was quite probably the first step made in today's concept of food safety.

Salt played a great roll in preservation as Strabo, the Greek geographer and historian of the first century noted in his writings of the fish salting houses of ancient Greece and Rome. This use of salt minimized microbes, lowered water content, and ensured a steady supply of much needed protein in an era devoid of refrigeration.

Today we still are concerned with eliminating harmful bacteria in the process of preservation, but do so more to enjoy the wonderful and increasingly popular products of charcuterie rather than an effort to stockpile protein in a life or death struggle.

The Scientific Processes Underlying Curing and Brining

First of all, salts, sugars and spices (of course today chemicals like nitrates and nitrites too) are the pathways to curing proteins. With these adjuncts science wealds its processes, which are:

- **Osmosis**
- **Dehydration**
- **Denaturing**
- **Fermentation**

Osmosis

Think back to an early science class you have had. Remember that **osmosis** refers to the movement of something through the semi-permeable membrane of a cell wall. In our case, this often means water, salt, and flavorings entering a cell wall and moisture in the way of water, albumen, and blood being drawn out. Which leads us to the next step.

Dehydration

When the curing agents are carried into the cell walls, they tend to dehydrate the protein by leeching out harmful pathogens and moisture. One good example is when we make duck confit by applying salt and *quatre espices;* it does not take long to see the dripping of water and blood from the duck legs into the pan below.

Denaturing

Think of this as "cooking without heat". Have you ever marinated a piece of fish or shrimp in Italian dressing before you cooked it? Did you notice the protein turn from a translucent color to a white opaque color? What is happening here is a cooking process called denaturing. In the simplest form, it means that the acid is changing the protein into a form that in many cases is edible. Ceviche is a perfect example of this. We can marinate fish, shrimp, scallops, and more in lemon and lime juice; add tomato concasse, onions, cilantro and seasonings. Toss it and serve it with tortilla chips and you are ready to enjoy a wonderful Latin dish.

Fermentation

The biggest trend in food today is fermentation. Examples are Kombucha, yogurts, Sauer krauts, and cured meats. There are enzymes present in foods which feed on the proteins and break them down into gases and organic compounds. Salt keeps this in check otherwise the food would simple decay. As meats age these enzymes add tenderness as they break down the protein. As we increase the acid levels during fermentation we also help to preserve the foods.

How Curing and Brining Relate to the Garde Manger

It is important to think back to the acronym '**FATTOM**' from your food safety class. Food safety is an extremely important element in curing and brining due to the nature of the process.

- **Food**
- **Acidity**
- **Time**
- **Temperature**
- **Oxygen**
- **Moisture**

When making charcuterie the Garde Manger is concerned with eliminating the chances of microorganisms and the circumstances that give them quarter in the foods we prepare. Bacteria love proteins and if we can control the factors that allow them growth we can preserve a product that is not only wholesome but also delicious and in great demand. We accomplish this in several ways. We can preserve with fat, as in the case of confit of duck breast. The duck is cooked in its own fat and allowed to cool creating a layer of fat that envelopes the protein and keeps out oxygen - thus preserving the meat. We see this ***fat preservation*** also in making rillettes- a preserve of stewed boned meats that are beaten with a mixer and paddle to a paste consistency, and mixed with and covered by melted fat to be eaten on toast points. Tuna can be preserved in a similar way with oil. Today modernist chefs are preserving other products in fat or oil as in the case of tomatoes and red onion, making the wave on condiment usage remain on trend since the 1990's.

Salts aide in pulling moisture out of the meat and we know that bacteria need moisture to grow and survive. Curing agents make food unpalatable to bacteria, lessening their harmful effects. When discussing Curing it is important to distinguish between the following:

- **Dry Cure-** dry salt and sugar cures
- **Wet Cure-** also known as brines

Dry Cures are not to be confused with rubs, which are very popular today in the growing popularity of barbecuing. Dry cures are often used to bury the protein and can last for days depending on the thickness of the animal or primal cut being cured. In Europe, it is common to bury wild boar legs in salt for nearly two weeks. As with any cure or brine, it is very important that the Garde Manger take great care to check the product to insure that it is evenly cured and not left too long so as to render the product inedible. Below is a table for Curing and Brining found in a highly recommended textbook - Garde Manger- the art of the cold kitchen 4th edition.

Curing Table:

Item	Time
¼ in thick	1 to 2 hours
1 in (lean meat)	3 to 8 hours
1 ½ in (pork belly)	7 to 10 days
Ham, bone in (15-18 lbs)	40 to 45 days

Figure 3a. Curing table from Garde Manger, 4th edition

Brining Table:

Item	Not pumped	Pumped
Chick Breast	24-36 hours	n/r
Chick,whole	24-36 hours	12-16 hours
Pork Butt Loin(bnless)	5-6 days	2 ½ -3 days
Turkey, whle	5-6 days	3 days
Corned Brisket	7-8 days	3-5 days
Ham, w/o	6 days	4 days
Ham, bone	20-24 days	6 -7 days

Figure 3b. Brining table from Garde Manger 4th edition

Brining is a curing medium usually consisting of salts, sugars, spices and water. Often the ingredients are boiled to enhance the flavor extraction of spices such as cloves, cinnamon sticks, allspice and others. It is most important to chill the brine before adding protein so that cooking does not begin and to avoid the ***temperature danger zone.*** Many recipes, especially older ones use more salt than sugar at about a 60/40 salt to sugar ratio. Today I and many other chefs are reversing the ration and using more sugar than salt in recipes where both are used. I do this in brines for pork barbecue. Remember that there is country ham and city ham. In most cases country ham is a salt cured product and city ham one the other hand is primarily sugar cured. My recipe for one such ham includes some salt but primarily blackstrap molasses and sugars.

Four Other Types of Curing Agents

- **Unrefined Salt**
- **Salt Peter/ Potassium Nitrate- banned in 1975 to combat hypertension**
- **Prague Powder I/ also known as TCM (tinted curing mix) or Pink Powder**
- **Prague Powder II**

There are also flavor enhancers known as Sodium Erythorbate and Ascorbate; however, these are not curing agents.

Tinted Curing mix, also known as Pink salt is commonly used in hot smoking (185°F- 285°F). It is a blend of 94% sodium chloride and 6% sodium nitrite. Be judicious with its use as it only takes 4 ounces to cure 100 pounds of meat. This is why it has a pink color so as not to mistake it for regular salt. This is a favorite cure for sausages, forcemeats, deli meats and bacon as it helps to retain the meats natural red color. It also fights against botulism, but is considered a carcinogen and today you can see a trend in the market for products that are marketed without curing agents as in "uncured pepperoni".

Prague Powder II is necessary when the meats being cured will undergo no cooking as in the case of hard salami. The curing agent here protects against botulism while the meat hangs and dries at various temperatures and humidity levels throughout its aging process. Prague Powder II is a blend of 90% sodium chloride, 6% sodium nitrite, and 4% nitrate and takes up to six weeks to break down under controlled conditions.

Of course, sugars remain an important resource for curing and can include many forms other than granulated sugars. Molasses, honey, maple syrup and even corn syrups are at your disposal.

During the Curing Process

We mentioned denaturing as one of the scientific processes earlier. During this process, the meat's natural structure undergoes changes. What was once soft becomes more firm as it loses its moisture. As we reach this stage especially in the case of bacon and ham production, we must begin our discussion of smoking. Here is where the rubber meets the road and we begin to see the fruits of our labor.

Smoking- a little physics, a little chemistry, a whole lot of happy

Smoking meats accomplish flavor enhancement or can be part of a plan to extend the life of foods as with country hams. It is important to note that if you have an operation that wishes to make and sell these types of smoked goods you may be required by your local food safety authority to obtain a ***variance***.

Once the brining or curing has taken place, there may be more steps prior to smoking. Check your recipes for guidance. For example in the case of blackstrap molasses cured hams. The recipe calls for soaking the ham for 8 hours in water while in the cooler to remove some salts. After this, the ham is patted dry and left in the cooler for several hours or up to overnight in order to form a ***pellicle***. The pellicle is a thin layer if film that is tacky or sticky. It forms a protective barrier and its tackiness allows for a better penetration of smoke into the meat. Otherwise, if the meat were placed in the smoker wet there would simply be a layer of soot on the meat that would be easily wiped away with your finger.

By now, you may begin to understand the lengthy process by which these smoked delicacies make it to the table and the care we must give the product for it to turn out right. This is part of the justification for the price of your labors.

Now let us address the smoke ring. The smoke ring is already within the meat in the form of myoglobin. It is the protein that makes raw meat red or pink. As the meat cooks, myoglobin turns brown, but if enough nitric oxide (NO) from the wood smoke condenses on your meat, it will bind with the still-red myoglobin and allow it to retain its color. **Feb 3, 2016, Texas Monthly*.

Moisture present during the smoking process by way of spritzing or use of a water pan helps the condensation of nitric oxide on the meat's surface, providing a better chance of development of the smoke ring. Smoke rings are nice and often responsible for guest delightful comments but in some competitive barbecue organizations are not only unrequired, but also offer no points advantage to the competitor.

Examples of competition barbecue plates for judging, from left to right are: Chicken thighs, pulled pork butt with "money meat", pork ribs, and beef brisket with "burnt ends". Note that the products are resting on beds of parsley.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Classroom Preparation Assignment #3

Curing Brining and Smoking

Name: _____ Date: _____

1. According to the Power Point Presentation, what are the four types of preservation?

2. The text describes what was likely to be the first step in the concept of food safety. What was it?

3. Who wrote of the first fish salting houses and where were they? You must have both answers.

4. What are the four scientific processes underlying Curing and Brining?

5. What does the acronym FATTOM stand for?

6. What color is TCM?

7. TCM is also known as?

8. Which curing mix is used in hot smoking?

9. What is a pellicle?

10. Why do we need a pellicle?

Chapter 4:
Charcuterie Production and Aging

Charcuterie Production in Various Forms

The word ***"charcuterie"*** refers to the art of making sausages both fresh and dried, rillettes and various forms of terrines, pates and galantines. It may also refers to makers of such meats. The word itself comes from the French, 'Chair'- meaning flesh and 'Cuite' meaning cooked, thus "cooked flesh.

For the purpose of following a progression of the classroom production schedule, we shall concentrate this chapter on dry curing meats and sausages that will benefit from the time remaining in the semester to cure, ferment, and age. The products discussed here will be ready for your final "Charcuterie Board" project on the final lab day before deep cleaning and final examinations.

Sausages

The term refers to a mixture of minced or ground seasoned products (usually meat). As is most often the case chefs use the "lesser" cuts which normally include the less tender, less prized, and less expensive cuts of the animal. If you have ever heard the saying, "eating high off the hog", know that this refers to the more expensive and tender cuts that are found higher on the animal. The lesser and tougher cuts are found lower on the animal. They lend themselves to braising (low and slow) or grinding to help them become palatable.

Our word "sausage" comes from the Latin word ***"Salsus"*** meaning salted. Early Greeks and Romans were among the first to make sausages.

Six basic components of sausage

- **Main ingredient**
- **Fat**
- **Seasonings and cure mixtures**
- **Spices**
- **Herbs**
- **Aromatics**

Sometimes animal or synthetic casings are used to hold sausages in a link or tube shape, but casing are not considered as a basic component because many sausages today are made into patties or packaged in a bulk form.

Main ingredient - Usually a tough cut of meat from the leg or shoulder

Figure 4a.
An example of meat after the grinding process - Wikimedia Commons

Fat

Two common forms of fat in the sausage process are pork fat and heavy cream. Fat is an essential ingredient that has three distinct purposes in the making of good sausage. Fat provides ***moisture, satiety, and flavor***.

Photo: Max Pixel

Seasonings and cure mixes

As discussed earlier in **Topic Three**, sugars (in many forms), salts (likewise), and various curing agents are necessary in the charcuterie process. These help to prevent food borne illness, add flavor, and lastly where hot smoking is concerned, sugar helps to act as a browning agent in the cooking process. The curing agents are especially useful when seasoning with herbs and garlic due to the opportunity for microbe contamination found in the soil. Often chefs cook the garlic and herbs or otherwise sterilize them prior to adding them to the raw meats. This is especially a good idea if the curing process will be done without cooking.

Figure 4 c.
Prague powder I, known as TCM or Pink Salt- Wikimedia Commons

Spices and Herbs

Spices may be toasted or untoasted and can vary form product type and style. They may be whole, ground, or from a prepared mix. Herbs may be fresh or dried. Italian sausage can be sweet or hot but usually has whole fennel seed in the recipe. Merguez is a Mediterranean sausage from North Africa that utilizes ground spices from the pantry of Tunisia. The French are known for a mixture of spices called ***Quatre Espices*** that can be found in anything from pate to confit of duck. One popular recipe for Quatre Espices is one part ground cinnamon, one part ground cloves, one and one-half part ground nutmeg, and two parts ground black pepper.

Figure 4d.
Spices common used in Quatre Espices- Commons Wikimedia.org

Aromatics

Aromatics include wine, liquors, and zests, prepared sauces such as Worcestershire and Tabasco, and vegetables that as stated before as often cooked first. In Cajun country, we are very familiar with Boudin, a sausage of rice and pork (primarily liver). Our beloved trinity of celery, onions, and bell pepper place a big role in the making of all our dishes especially Boudin. During crawfish season, you can find Crawfish Boudin and I have seen red bell pepper used here over the normal green pepper found in the pork version.

Figures 4d and e. Examples of aromatics used in sausage making.

Natural and Synthetic Casings in Sausage Making

We shall only use natural casing for the purpose of our beginning foray into charcuterie but let us discuss what is available to chefs who want to pursue this line of work. Synthetic casings are made for a variety of food grade materials, some of which are non-edible. Natural casing come from the intestines of sheep, pork, and cattle and should be washed in water and vinegar.

Figure 4f. Natural casing example

Synthetic casings can be made from cotton, cellulose, or collagen that comes from the corium layer of split beef hide. Be careful to remove such casings prior to serving to guests.

Figure 4g. Synthetic casing examples

Sheep Casings

Often referred to as "sheep hanks", these casing provide the smallest of the three intestines used in sausage making. Merguez is traditionally made with sheep hanks for a slender sausage of 24-26 millimeters up to 30mm.

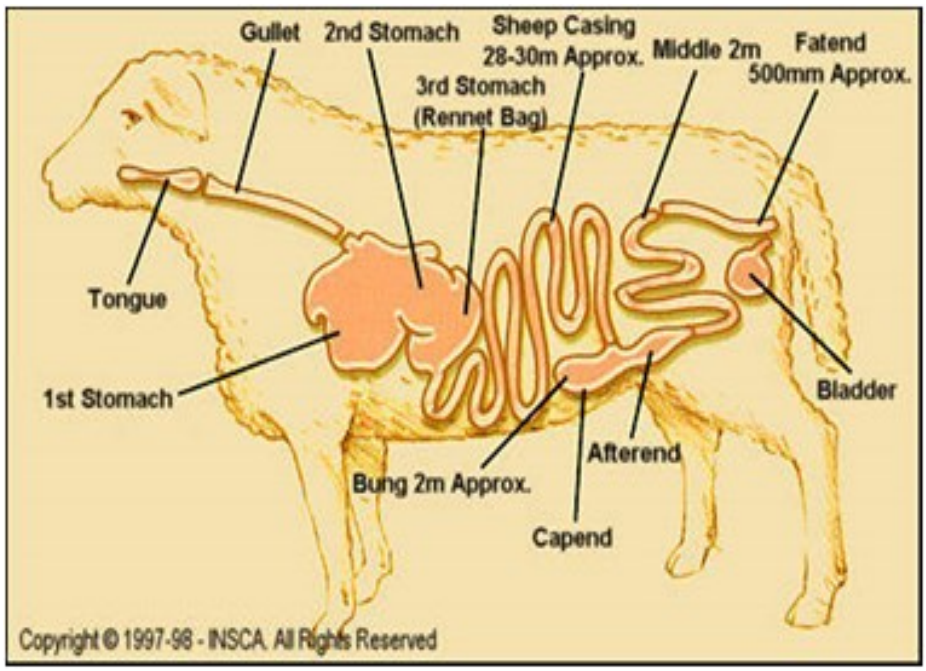


Figure 4h. Sheep offal relating to sausage making from INSCA

Hog Casings

Hog casings are referred to as **"Hanks"** also and we will use the intestine for many sausage preparations. The intestines are larger than sheep hanks, and come threaded on rings and shipped in a salt mixture to fight bacteria. They are washed and threaded into a stuffing tube to be filled. ***Middles*** are even larger and used for specialty sausages such as the Saucisson Sec, a dried pork and garlic sausage.

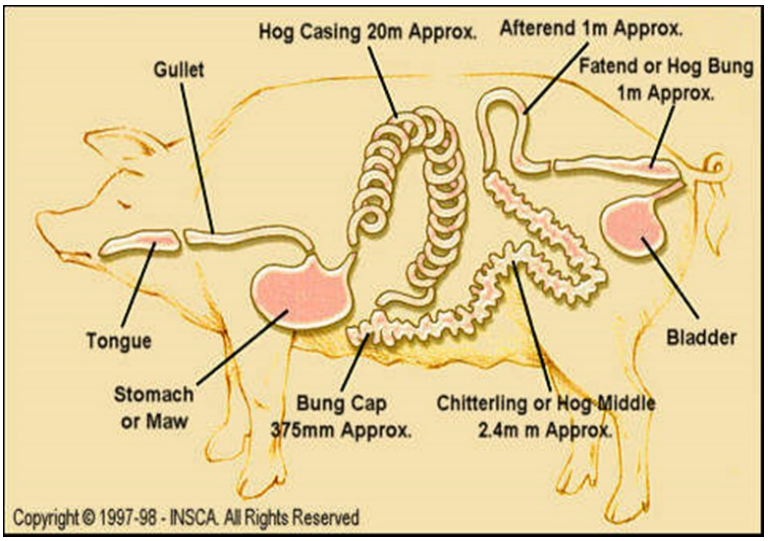


Figure 4i. Hog offal relating to sausage making from INSCA

Beef Runners and Middles

Beef offers the largest size intestine up to 65 millimeters and is best suited for Cajun Andouille Sausage. They are often shipped in plastic buckets in a salt medium, and should be washed and threaded onto the largest of the stuffer tubes when making sausage.

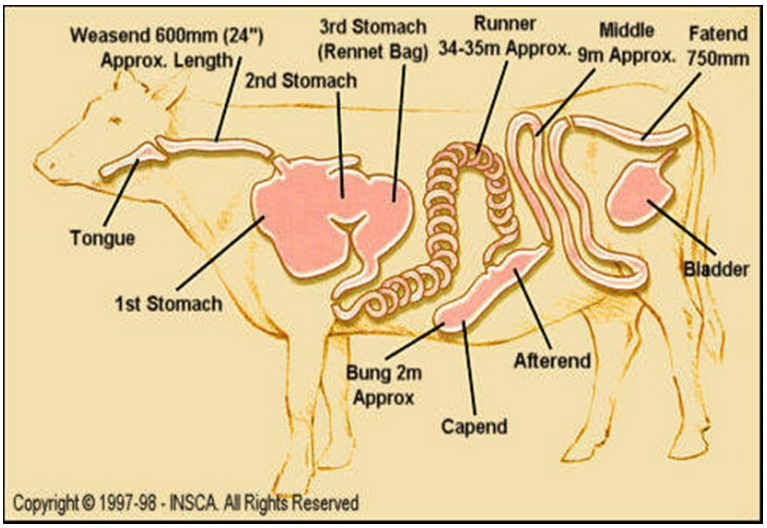


Figure 4j. Beef offal relating to sausage making from INSCA

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Classroom Preparation Assignment #4

Charcuterie Production and Aging

Name: _____ Date: _____

1. What does Charcuterie mean in the French language?

2. What Latin word do we derive our word for sausage from and what does it mean? Both answers are needed.

3. What are the six basic components of sausage?

4. What does fat give to sausage?

5. The French are noted for a spice blend called?

6. Aromatics include what 5 things?

7. We use casings from which three animals?

8. Casings are also referred to as…?

9. We use middles for larger sausages like Andouille. T or F. Circle one.

10. What is the temperature range for cold smoking?

Chapter 5:
Condiments and Canning

Figure 5a.
Canned Tomato Sauce from oversupply of end of semester stock in 2017.
Photo credit: Marshall Welsh

Condiments continue to take center stage in culinary trends as they have since their popularity rose in the late 1990's. Often there are preserved by canning or sous vide methods popularized in France decades ago. We may look to our agrarian past to see that canning began as a way of preserving foods that were too plentiful to consume totally fresh or as a means of extending their shelf life into the next season past their natural growing time. Today we still do the same but often we do so to add textures, colors, and even acidity to dishes in a planned way to get the most complimentary nuances from their pairings. Condiments are the "building blocks" of the Garde Manger- offering tastes of tart, salty, spicy, or piquant to enhance the flavor of dishes with which they are pared. Examples include mustards, ketchups, chutneys, relishes, pickles, and compotes.

Rather than attempt a comprehensive course on canning, we are going to touch on the high spots and focus on recipes and sanitation methods to ensure safe canning for our project purposes. For those who wish to delve more deeply into canning later there are a number of books and free web based resources available.

- The book- *Fool Proof Preserving* by America's Test Kitchen ISBN 978-1-940352-51-0
- National Center for Home Food Preservation- **https://nchfp.uga.edu/**
- *Garde Manger The Art of the Cold Kitchen- 4th edition* ISBN 978-0-470-58780-5

Condiments

Condiments are boldly flavored supporting actors for the plate. They are often served on the side to be used at the will of the guest. In the Deep South many people like to garnish there black-eyed peas with chow-chow- a relish of tomato, onion, bell pepper and cabbage. Condiments are also spreads and dips either slathered on bread like remoulade sauce or mayonnaise on a Po-Boy in New Orleans or horseradish and chili sauce based cocktail sauce to dip fried shrimp in at any of a hundred places up and down the bayou. The point being that a condiment adds a little lagniappe to any dish.

Relish

I remember once that Chef Steven Jilleba, CMC said that he liked the combination of hot and cold food. Relishes offer a perfect opportunity for such. They are most often served cold and placed with or on a hot food item, like pickle relish on a hot dog or chow-chow on black-eyed peas. Relishes liven up and add pizzazz. Some examples are listed below.

- Cranberry relish
- Curried onion relish
- Red onion confit
- Chow-Chow

Mustard

Mustards are a must have pantry staple and are as varied as there are uses for this condiment. They can act as a coating on lamb before topping with breadcrumbs and roasting, an emulsifier when making vinaigrettes and mayonnaise, a dipping sauce, and simply a sauce to add flavor and moisture to sandwiches and hotdogs. In America, we often use a bright yellow prepared mustard but mustards vary from culture to culture. Some are sweet and smooth while others can be hot and grainy with whole mustard seeds. Some mustards we have available to make include:

- **Heywood's Mustard-** a zesty cooked mustard that tastes as if it has horseradish
- **Swedish mustard Sauce-** especially good with cured salmon
- **Beer Mustard with Caraway Seeds-** a favorite of bratwurst

Ketchup

Though the origin of ketchup is open to debate, one thing for sure is that today it has morphed into a primarily tomato based sauce and is ubiquitous in our culture. Many chefs prepare their own unique iteration of ketchup to have an air of specialty on the menu. I've always made my own cocktail sauce with a good quality ketchup as a base and added horseradish sauce and lemon juice at the very least.

Compotes

These are made often by cooking fruits in a syrup and serving them with other sweet desserts. As this relates to the Garde Manger, you could choose a savory item and cook as you would a salpicon to serve with a pate or terrine.

Chutney

You may be familiar with Major Grey's Chutney. It is a sweet and sour tasting condiment with fruit, ginger, and spices that accompany meats that are often served with a gastrique, like duck and lamb. Chutney is a gift to the world form the culture of India where they also make vegetable based chutney to accompany their diet that is primarily plant based.

Pickles

Pickles are found in cultures around the world and also include many varied ingredients in their preparation from vegetables to eggs, to fruits as in Italy's Mostardo, to pig's feet. The cucumbers we most often associate with pickles can be made sweet with sugars and sweet spices or hot and spicy or even sour. They may be whole, sliced or made into a relish. The relish is called dill relish if made sour and sweet relish if made sweet. Sour pickles are loved by many but too sour for me. In the Deep South a favorite is the beloved Bread and Butter Pickle. Some of the forms we may make in class include:

- **Cajun Pickled Okra**
- **Bread and Butter Pickles**
-

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Kerr ® and Ball canning jar lids and seals- Wikipedia

Seals have a rubber seal that fit snuggly to the jar top and are not reusable. Ring lids may be reused until rust shows. Boiling the jars and lids will sterilize the containers and boiling after filling and sealing eliminate bacteria growth.

How Canning Preserves Foods

The high percentage of water in most fresh foods makes them very perishable. They spoil or lose their quality for several reasons:

1. growth of undesirable microorganisms-bacteria, molds, and yeasts,
2. activity of food enzymes,
3. reactions with oxygen,
4. moisture loss.

Microorganisms live and multiply quickly on the surfaces of fresh food and on the inside of bruised, insect-damaged, and diseased food. Oxygen and enzymes are present throughout fresh food tissues.

Proper canning practices include:

1. carefully selecting and washing fresh food,
2. peeling some fresh foods,
3. hot packing many foods,
4. adding acids (lemon juice or vinegar) to some foods,
5. using acceptable jars and self-sealing lids,
6. processing jars in a boiling-water or pressure canner for the correct period of time.

Collectively, these practices remove oxygen; destroy enzymes; prevent the growth of undesirable bacteria, yeasts, and molds; and help form a high vacuum in jars. Good vacuums form tight seals that keep liquid in and air and microorganisms out.

Ensuring Safe Canned Foods

Growth of the bacterium Clostridium botulinum in canned food may cause botulism—a deadly form of food poisoning. These bacteria exist either as spores or as vegetative cells. The spores, which are comparable to plant seeds, can survive harmlessly in soil and water for many years. When ideal conditions exist for growth, the spores produce vegetative cells, which multiply rapidly and may produce a deadly toxin within 3 to 4 days of growth in an environment consisting of:

- a moist, low-acid food
- a temperature between 40° and 120°F
- less than 2 percent oxygen

Botulinum spores are on most fresh food surfaces. Because they grow only in the absence of air, they are harmless on fresh foods.

Most bacteria, yeasts, and molds are difficult to remove from food surfaces. Washing fresh food reduces their numbers only slightly. Peeling root crops, underground stem crops, and tomatoes reduces their numbers greatly. Blanching also helps, but the vital controls are the method of canning and making sure the recommended research-based process times found in the USDA's Complete Guide to Home Canning are used. The processing times in this book ensure destruction of the largest expected number of heat-resistant microorganisms in home-canned foods. Properly sterilized canned food will be free of spoilage if lids seal and jars are stored below 95°F. Storing jars at 50° to 70°F enhances retention of quality.

Food acidity and processing methods

Whether food should be processed in a pressure canner or boiling-water canner to control botulinum bacteria depends on the acidity of the food. Acidity may be natural, as in most fruits, or added, as in pickled food. Low-acid canned foods are not acidic enough to prevent the growth of these bacteria. Acid foods contain enough acid to block their growth, or destroy them more rapidly when heated. The term "pH" is a measure of acidity - the lower its value, the more acidic the food. The acidity level in foods can be increased by adding lemon juice, citric acid, or vinegar.

Low-acid foods have pH values higher than 4.6. They include red meats, seafood, poultry, milk, and all fresh vegetables except for most tomatoes. Most mixtures of low-acid and acid foods also have pH values above 4.6 unless their recipes include enough lemon juice, citric acid, or vinegar to make them acid foods. Acid foods have a pH of 4.6 or lower. They include fruits, pickles, sauerkraut, jams, jellies, marmalades, and fruit butters.

Although tomatoes are usually considered an acidic food, some are now known to have pH values slightly above 4.6. Figs also have pH values slightly above 4.6. Therefore, if they are to be canned as acid foods, these products must be acidified to a pH of 4.6 or lower with lemon juice or citric acid. Properly acidified tomatoes and figs are acid foods and can be safely processed in a boiling-water canner.

Botulinum spores are very hard to destroy at boiling-water temperatures; the higher the canner temperature, the more easily they are destroyed. Therefore, all low-acid foods should be sterilized at temperatures of 240° to 250°F, attainable with pressure canners operated at 10 to 15 PSIG. PSIG means pounds per square inch of pressure as measured by gauge. The more familiar "PSI" designation is used hereafter in this publication (the Complete Guide to Home Canning). At temperatures of 240° to 250°F, the time needed to destroy bacteria in low-acid canned food ranges from 20 to 100 minutes.

The exact time depends on the kind of food being canned, the way it is packed into jars, and the size of jars. The time needed to safely process low-acid foods in a boiling-water canner range from seven to 11 hours; the time needed to process acid foods in boiling water varies from five to 85 minutes.

For Safety Purposes

Pressure canning is the only recommended method for canning meat, poultry, seafood, and vegetables. The bacterium Clostridium botulinum is destroyed in low-acid foods when they are processed at the correct time and pressure in pressure canners. Using boiling water canners for these foods poses a real risk of botulism poisoning.

If Clostridium botulinum bacteria survive and grow inside a sealed jar of food, they can pro-duce a poisonous toxin. Even a taste of food containing this toxin can be fatal. Boiling food 10 minutes at altitudes below 1,000 feet altitude should destroy this poison when it is present. For altitudes at and above 1,000 feet, add 1 additional minute per 1,000 feet additional elevation. Boiling means that you are able to see the liquid in the food actively forming large foamy bubbles that break all over the surface. Note that as of July 2013 the Centers for Disease Control and Prevention (CDC) recommendation is to discard any home canned food that might contain botulism toxin. (http://www.cdc.gov/features/homecanning/)

Caution: To prevent the risk of botulism, low-acid and tomato foods not canned according to the recommendations in the USDA Complete Guide to Home Canning (2015rev) or according to other USDA-endorsed recom-mendations should be boiled as above, in a saucepan before consuming, even if you detect no signs of spoilage.

All low-acid foods canned according to the approved recommendations may be eaten without boiling them when you are sure of all the following:

- The food was processed in a pressure canner operated according to the procedures in the USDA guidelines.
- The gauge of the pressure canner was accurate.
- Up-to-date researched process times and pressures were used for the size of jar, style of pack, and kind of food being canned.
- The process time and pressure recommended for sterilizing the food at your altitude was followed.
- The jar lid is firmly sealed, and indicates a vacuum seal is present.
- Nothing has leaked from jar.
- No liquid spurts out when jar is opened.
- No unnatural or “off” odors can be detected. No mold is present.

Equipment and Methods Not Recommended

Open-kettle canning and the processing of freshly filled jars in conventional ovens, microwave ovens, and dishwashers are not recommended, because these practices do not prevent all risks of spoilage. Steam canners are not currently recommended because processing times for use with current models are still being researched. It is not recommended that pressure processes in excess of 15 PSI be applied when using new pressure canning equipment. So-called canning powders are useless as preservatives and do not replace the need for proper heat processing. While jars with wire bails and glass caps make attractive antiques or storage containers for dry food ingredients, they are not recommended for use in canning. Neither one-piece zinc porcelain-lined caps nor zinc caps that use flat rubber rings for sealing jars are recommended any longer.

The language above is from the USDA "Complete Guide to Home Canning" (2015 revision). You may also want to read our National Center Burning Issue: *Using Atmospheric Steam Canners*. The National Center collaborated with the University of Wisconsin to have research conducted on appropriate use of atmospheric steam canners. As long as certain critical controls can be maintained at various steps in the canning process, there are many products appropriate for canning in atmospheric steam canners.

Ensuring High-Quality Canned Foods

Begin with good-quality fresh foods suitable for canning. Quality varies among varieties of fruits and vegetables. Examine food carefully for freshness and wholesomeness. Discard diseased and moldy food. Trim small diseased lesions or spots from food.

Can fruits and vegetables picked from your garden or purchased from nearby producers when the products are at their peak of quality—within 6 to 12 hours after harvest for most vegetables. For best quality, apricots, nectarines, peaches, pears, and plums should be ripened 1 or more days between harvest and canning. If you must delay the canning of other fresh produce, keep it in a shady, cool place.

Fresh home-slaughtered red meats and poultry should be chilled and canned immediately. Do not can meat from sickly or diseased animals. Ice fish and seafood after harvest, eviscerate immediately, and can them within 2 days.

Maintaining color and flavor in canned food

To maintain good natural color and flavor in stored canned food, you must:

- Remove oxygen from food tissues and jars,
- Quickly destroy the food enzymes,
- Obtain high jar vacuums and airtight jar seals.

Follow these guidelines to ensure that your canned foods retain optimum colors and flavors during processing and storage:

- Use only high-quality foods that are at the proper maturity and are free of diseases and bruises.
- Use the hot-pack method, especially with acid foods to be processed in boiling water.
- Do not expose prepared foods to air without reason. Can them as soon as possible.
- While preparing a canner load of jars, keep peeled, halved, quartered, sliced, or diced apples, apricots, nectarines, peaches, and pears in a solution of 3 grams (3,000 milligrams) ascorbic acid to 1 gallon of cold water. This procedure is also useful in maintaining the natural color of mushrooms and potatoes, and for preventing stem-end discoloration in cherries and grapes.

You can get ascorbic acid in several forms:

Pure powdered form —seasonally available among canners' supplies in supermarkets. One level teaspoon of pure powder weighs about 3 grams. Use 1 teaspoon per gallon of water as a treatment solution.

Vitamin C tablets —economical and available year-round in many stores. Buy 500-milligram tablets; crush and dissolve six tablets per gallon of water as a treatment solution.

Commercially prepared mixes of ascorbic and citric acid —seasonally available among canners' supplies in supermarkets. Sometimes citric acid powder is sold in supermarkets, but it is less effective in controlling discoloration. If you choose to use these products, follow the manufacturer's directions.

1. Fill hot foods into jars and adjust headspace as specified in recipes.
2. Tighten screw bands securely, but if you are especially strong, not as tightly as possible.
3. Process and cool jars.
4. Store the jars in a relatively cool, dark place, preferably between 50° and 70°F.
5. Can no more food than you will use within a year.

Advantages of hot packing

Many fresh foods contain from 10 percent to more than 30 percent air. How long canned food retains high quality depends on how much air is removed from food before jars are sealed.

Raw packing is the practice of filling jars tightly with freshly prepared, but unheated food. Such foods, especially fruit, will float in the jars. The entrapped air in and around the food may cause discoloration within 2 to 3 months of storage. Raw packing is more suitable for vegetables processed in a pressure canner.

Hot packing is the practice of heating freshly prepared food to boiling, simmering it 2 to 5 minutes, and promptly filling jars loosely with the boiled food. Whether food has been hot-packed or raw-packed, the juice, syrup, or water to be added to the foods should also be heated to boiling before adding it to the jars. This practice helps to remove air from food tissues, shrinks food, helps keep the food from floating in the jars, increases vacuum in sealed jars, and improves shelf life. Preshrinking food permits filling more food into each jar.

Hot packing is the best way to remove air and is the preferred pack style for foods processed in a boiling-water canner. At first, the color of hot-packed foods may appear no better than that of raw-packed foods, but within a short storage period, both color and flavor of hot-packed foods will be superior.

Controlling headspace

The unfilled space above the food in a jar and below its lid is termed headspace. Directions for canning specify leaving 1/4-inch for jams and jellies, ½-inch for fruits and tomatoes to be processed in boiling water, and from 1- to 1¼-inches in low acid foods to be processed in a pressure canner. This space is needed for expansion of food as jars are processed, and for forming vacuums in cooled jars. The extent of expansion is determined by the air content in the food and by the processing temperature. Air expands greatly when heated to high temperatures; the higher the temperature, the greater the expansion. Foods expand less than air when heated.

Recommended Jars and Lids

Food may be canned in glass jars or metal containers. Metal containers can be used only once. They require special sealing equipment and are much more costly than jars.

Regular and wide-mouth Mason-type, threaded, home-canning jars with self-sealing lids are the best choice. They are available in ½ pint, pint, 1½ pint, quart, and ½-gallon sizes. The standard jar mouth opening is about 2-3/8 inches. Wide-mouth jars have openings of about 3 inches, making them more easily filled and emptied. Half-gallon jars may be used for canning very acid juices. Regular-mouth decorator jelly jars are available in 8 and 12-ounce sizes. With careful use and handling, Mason jars may be reused many times, requiring only new lids each time. When jars and lids are used properly, jar seals and vacuums are excellent and jar breakage is rare.

Most commercial pint- and quart-size mayonnaise or salad dressing jars may be used with new two-piece lids for canning acid foods. However, you should expect more seal failures and jar breakage. These jars have a narrower sealing surface and are tempered less than Mason jars, and may be weakened by repeated contact with metal spoons or knives used in dispensing mayonnaise or salad dressing. Seemingly, insignificant scratches in glass may cause cracking and breakage while processing jars in a canner. Mayonnaise-type jars are not recommended for use with foods to be processed in a pressure canner because of excessive jar breakage. Other commercial jars with mouths that cannot be sealed with two-piece canning lids are not recommended for use in canning any food at home.

Jar Cleaning
Before every use, wash empty jars in hot water with detergent and rinse well by hand, or wash in a dishwasher. Unrinsed detergents may cause unnatural flavors and colors. These washing methods do not sterilize jars. Scale or hard-water films on jars are easily removed by soaking jars several hours in a solution containing 1 cup of vinegar (5 percent acidity) per gallon of water.

Sterilization of Empty Jars
All jams, jellies, and pickled products processed less than 10 minutes should be filled into sterile empty jars. To sterilize empty jars, put them right side up on the rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above the tops of the jars. Boil 10 minutes at altitudes of less than 1,000 ft. At higher elevations, boil one additional minute for each additional 1,000 ft. elevation. Remove and drain hot sterilized jars one at a time. Save the hot water for processing filled jars. Fill jars with food, add lids, and tighten screw bands.

Empty jars used for vegetables, meats, and fruits to be processed in a pressure canner need not be pre-sterilized. It is also unnecessary to pre-sterilize jars for fruits, tomatoes, and pickled or fermented foods that will be processed 10 minutes or longer in a boiling-water canner.

Lid Selection, Preparation, and Use

The common self-sealing lid consists of a flat metal lid held in place by a metal screw band during processing. The flat lid is crimped around its bottom edge to form a trough, which is filled with a colored gasket compound. When jars are processed, the lid gasket softens and flows slightly to cover the jar-sealing surface, yet allows air to escape from the jar. The gasket then forms an airtight seal as the jar cools. Gaskets in unused lids work well for at least 5 years from date of manufacture. The gasket compound in older unused lids may fail to seal on jars.

Buy only the quantity of lids you will use in a year. To ensure a good seal, carefully follow the manufacturer's directions in preparing lids for use. Examine all metal lids carefully. Do not use old, dented, or deformed lids or lids with gaps or other defects in the sealing gasket.

When directions say to fill jars and adjust lids, use the following procedures: After filling jars with food and adding covering liquid, release air bubbles by inserting a flat plastic (not metal) spatula between the food and the jar. Slowly turn the jar and move the spatula up and down to allow air bubbles to escape. (It is not necessary to release air bubbles when filling jams, jellies or all liquid foods such as juices.) Adjust the headspace and then clean the jar rim (sealing surface) with a dampened paper towel. Place the preheated lid, gasket down, onto the cleaned jar-sealing surface. Uncleaned jar-sealing surfaces may cause seal failures. Then fit the metal screw band over the flat lid. Follow the manufacturer’s guidelines enclosed with or on the box for tightening the jar lids properly.

Do not retighten lids after processing jars. As jars cool, the contents in the jar contract, pulling the self-sealing lid firmly against the jar to form a high vacuum.

- If rings are too loose, liquid may escape from jars during processing, and seals may fail.
- If rings are too tight, air cannot vent during processing, and food will discolor during storage. Over tightening also may cause lids to buckle and jars to break, especially with raw-packed, pressure-processed food.

Screw bands are not needed on stored jars. They can be removed easily after jars are cooled. When removed, washed, dried, and stored in a dry area, screw bands may be used many times. If left on stored jars, they become difficult to remove, often rust, and may not work properly again.

Recommended Canners

Equipment for heat-processing home-canned food is of two main types—boiling-water canners and pressure canners. Most are designed to hold seven-quart jars or eight to nine pints. Small pressure canners hold four-quart jars; some large pressure canners hold 18-pint jars in two layers, but hold only seven-quart jars. Pressure saucepans with smaller volume capacities are not recommended for use in canning. Small capacity pressure canners are treated in a similar manner as standard larger canners, and should be vented using the typical venting procedures.

Low-acid foods must be processed in a pressure canner to be free of botulism risks. Although pressure canners may also be used for processing acid foods, boiling water canners are recommended for this purpose because they are faster. A pressure canner would require from 55 to 100 minutes to process a load of jars; while the total time for processing most acid foods in boiling water varies from 25 to 60 minutes. A boiling-water canner loaded with filled jars requires about 20 to 30 minutes of heating before its water begins to boil. A loaded pressure canner requires about 12 to 15 minutes of heating before it begins to vent; another 10 minutes to vent the canner; another 5 minutes to pressurize the canner; another 8 to 10 minutes to process the acid food; and, finally, another 20 to 60 minutes to cool the canner before removing jars.

Boiling-water canners
These canners are made of aluminum or porcelain-covered steel. They have removable perforated racks and fitted lids. The canner must be deep enough so that at least 1 inch of briskly boiling water will be over the tops of jars during processing. Some boiling-water canners do not have flat bottoms. A flat bottom must be used on an electric range. Either a flat or ridged bottom can be used on a gas burner. To ensure uniform processing of all jars with an electric range, the canner should be no more than 4 inches wider in diameter than the element on which it is heated.

Using boiling-water canners

Follow these steps for successful boiling-water canning:

1. Before you start preparing your food, fill the canner halfway with clean water. This is approximately the level needed for a canner load of pint jars. For other sizes and numbers of jars, the amount of water in the canner will need to be adjusted so it will be 1 to 2 inches over the top of the filled jars.
2. Preheat water to 140°F for raw-packed foods and to 180°F for hot-packed foods. Food preparation can begin while this water is preheating.
3. Load filled jars, fitted with lids, into the canner rack and use the handles to lower the rack into the water; or fill the canner with the rack in the bottom, one jar at a time, using a jar lifter. When using a jar lifter, make sure it is securely positioned below the neck of the jar (below the screw band of the lid). Keep the jar upright at all times. Tilting the jar could cause food to spill into the sealing area of the lid.
4. Add more boiling water, if needed, so the water level is at least 1 inch above jar tops. For process times over 30 minutes, the water level should be at least 2 inches above the tops of the jars.
5. Turn heat to its highest position, cover the canner with its lid, and heat until the water in the canner boils vigorously.
6. Set a timer for the total minutes required for processing the food.
7. Keep the canner covered and maintain a boil throughout the process schedule. The heat setting may be lowered a little as long as a complete boil is maintained for the entire process time. If the water stops boiling at any time during the process, bring the water back to a vigorous boil and begin the timing of the process over, from the beginning.
8. Add more boiling water, if needed, to keep the water level above the jars.
9. When jars have been boiled for the recommended time, turn off the heat and remove the canner lid. Wait 5 minutes before removing jars.
10. Using a jar lifter, remove the jars and place them on a towel, leaving at least 1-inch spaces between the jars during cooling. Let jars sit undisturbed to cool at room temperature for 12 to 24 hours.

Pressure canners

Pressure canners for use in the home have been extensively redesigned in recent years. Models made before the 1970's were heavy-walled kettles with clamp-on or turn-on lids. They were fitted with a dial gauge, a vent port in the form of a petcock or counterweight, and a safety fuse. Modern pressure canners are lightweight, thin-walled kettles; most have turn-on lids. They have a jar rack, gasket, dial or weighted gauge, an automatic vent/cover lock, a vent port (steam vent) to be closed with a counterweight or weighted gauge, and a safety fuse.

Pressure does not destroy microorganisms, but high temperatures applied for an adequate period of time do kill microorganisms. The success of destroying all microorganisms capable of growing in canned food is based on the temperature obtained in pure steam, free of air, at sea level. At sea level, a canner operated at a gauge pressure of 10.5 lbs. provides an internal temperature of 240°F.

Parts of a Pressure Canner

Two serious errors in temperatures obtained in pressure canners occur because:

1. Internal canner temperatures are lower at higher altitudes. To correct this error, canners must be operated at the increased pressures specified in this publication (USDA's Complete Guide to Home Canning) for appropriate altitude ranges.

2. Air trapped in a canner lowers the temperature obtained at 5, 10, or 15 pounds of pressure and results in under processing. The highest volume of air trapped in a canner occurs in processing raw-packed foods in dial-gauge canners. These canners do not vent air during processing. To be safe, all types of pressure canners must be vented 10 minutes before they are pressurized.

To vent a canner, leave the vent port uncovered on newer models or manually open petcocks on some older models. Heating the filled canner with its lid locked into place boils water and generates steam that escapes through the petcock or vent port. When steam first escapes, set a timer for 10 minutes. After venting 10 minutes, close the petcock, place the counterweight, or weighted gauge over the vent port to pressurize the canner.

Weighted-gauge models exhaust tiny amounts of air and steam each time their gauge rocks or jiggles during processing. They control pressure precisely and need neither watching during processing nor checking for accuracy. The sound of the weight rocking or jiggling indicates that the canner is maintaining the recommended pressure. The single disadvantage of weighted-gauge canners is that they cannot correct precisely for higher altitudes. At altitudes above 1,000 feet, they must be operated at canner pressures of 10 instead of 5, or 15 instead of 10, PSI.

Check dial gauges for accuracy before use each year. Gauges that read high cause under-processing and may result in unsafe food. Low readings cause over-processing. Pressure adjustments can be made if the gauge reads up to 2 pounds high or low. Replace gauges that differ by more than 2 pounds. Every pound of pressure is very important to the temperature needed inside the canner for producing safe food, so accurate gauges and adjustments are essential when a gauge reads higher than it should. If a gauge is reading lower than it should, adjustments may be made to avoid over-processing, but are not essential to safety. Gauges may be checked at many county Cooperative Extension offices or contact the pressure canner manufacturer for other options.

Handle canner lid gaskets carefully and clean them according to the manufacturer's directions. Nicked or dried gaskets will allow steam leaks during pressurization of canners. Keep gaskets clean between uses. Gaskets on older model canners may require a light coat of vegetable oil once per year. Gaskets on newer model canners are pre-lubricated and do not benefit from oiling. Check your canner's instructions if there is doubt that the particular gasket you use has been pre-lubricated.

Lid safety fuses are thin metal inserts or rubber plugs designed to relieve excessive pressure from the canner. Do not pick at or scratch fuses while cleaning lids. Use only canners that have the Underwriter's Laboratory (UL) approval to ensure their safety. Replacement gauges and other parts for canners are often available at stores offering canning equipment or from canner manufacturers. When ordering parts, give your canner model number and describe the parts needed.

Using pressure canners

Follow these steps for successful pressure canning:

1. Put 2 to 3 inches of hot water in the canner. Some specific products in this Guide require that you start with even more water in the canner. Always follow the directions with USDA processes for specific foods if they require more water added to the canner. Place filled jars on the rack, using a jar lifter. When using a jar lifter, make sure it is securely positioned below the neck of the jar (below the screw band of the lid). Keep the jar upright at all times. Tilting the jar could cause food to spill into the sealing are of the lid. Fasten canner lid securely.
2. Leave weight off vent port or open petcock. Heat at the highest setting until steam flows freely from the open petcock or vent port.
3. While maintaining the high heat setting, let the steam flow (exhaust) continuously for 10 minutes, and then place the weight on the vent port or close the petcock. The canner will pressurize during the next 3 to 5 minutes.
4. Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or when the weighted gauge begins to jiggle or rock as the canner manufacturer describes.
5. Regulate heat under the canner to maintain a steady pressure at or slightly above the correct gauge pressure. Quick and large pressure variations during processing may cause unnecessary liquid losses from jars. Follow the canner manufacturer's directions for how a weighted gauge should indicate it is maintaining the desired pressure.

IMPORTANT: If at any time pressure goes below the recommended amount, bring the canner back to pressure and begin the timing of the process over, from the beginning (using the total original process time). This is important for the safety of the food.

6. When the timed process is completed, turn off the heat, remove the canner from heat if possible, and let the canner depressurize. Do not force-cool the canner. Forced cooling may result in unsafe food or food spoilage. Cooling the canner with cold running water or opening the vent port before the canner is fully depressurized will cause loss of liquid from jars and seal failures. Force-cooling may also warp the canner lid of older model canners, causing steam leaks. Depressurization of older models without dial gauges should be timed. Standard-size heavy-walled canners require about 30 minutes when loaded with pints and 45 minutes with quarts. Newer thin-walled canners cool more rapidly and are equipped with vent locks. These canners are depressurized when their vent lock piston drops to a normal position.
7. After the canner is depressurized, remove the weight from the vent port or open the petcock. Wait 10 minutes, unfasten the lid, and remove it carefully. Lift the lid away from you so that the steam does not burn your face.
8. Remove jars with a jar lifter, and place them on a towel, leaving at least 1-inch spaces between the jars during cooling. Let jars sit undisturbed to cool at room temperature for 12 to 24 hours.

Cooling Jars and Testing Jar Seals

Cooling jars

When you remove hot jars from a canner, do not retighten their jar lids. Retightening of hot lids may cut through the gasket and cause seal failures. Cool the jars at room temperature for 12 to 24 hours. Jars may be cooled on racks or towels to minimize heat damage to counters. The food level and liquid volume of raw-packed jars will be noticeably lower after cooling. Air is exhausted during processing and food shrinks. If a jar loses excessive liquid during processing, do not open it to add more liquid. Check for sealed lids as described below.

Testing jar seals

After cooling jars for 12 to 24 hours, remove the screw bands and test seals with one of the following options:

Option 1. Press the middle of the lid with a finger or thumb. If the lid springs up when you release your finger, the lid is unsealed.

Option 2. Tap the lid with the bottom of a teaspoon. If it makes a dull sound, the lid is not sealed. If food is in contact with the underside of the lid, it will also cause a dull sound. If the jar is sealed correctly, it will make a ringing, high-pitched sound.

Option 3. Hold the jar at eye level and look across the lid. The lid should be concave (curved down slightly in the center). If center of the lid is either flat or bulging, it may not be sealed.

Reprocessing unsealed jars

If a lid fails to seal on a jar, remove the lid and check the jar-sealing surface for tiny nicks. If necessary, change the jar, add a new, properly prepared lid, and reprocess within 24 hours using the same processing time. Headspace in unsealed jars may be adjusted to 1-½ inches and jars could be frozen instead of reprocessed. Foods in single unsealed jars could be stored in the refrigerator and consumed within several days.

Storing Canned Foods

If lids are tightly vacuum-sealed on cooled jars, remove ring bands, wash the lid and jar to remove food residue without disturbing the sealed lid; then rinse and dry jars. There may be food or syrup residues you might not notice with your eye. These residues can support the growth of molds (which are airborne) outside the jar during storage. Wash and dry ring bands to protect them from corrosion for future use; be sure to protect from moisture where they are kept. It is recommended that jars be stored without ring bands to keep them dry as well as to allow for easier detection of any broken vacuum seals. However, if you choose to re-apply the ring bands, make sure all surfaces are clean and thoroughly dry first.

If jars are stacked in storage, be careful not to disturb vacuum seals. It would be a good idea to not stack jars too high directly on top of each other; one manufacturer recommends no more than two layers high. It would be best to provide support between the layers as a preventive measure against disturbing the seals on the lower jars. Jars could be placed in boxes to be stacked, or use some type of a firm solid material across the jars as a supportive layer in between them.

Label and date the jars and store them in a clean, cool, dark, dry place. For best quality, store between 50 and 70 °F. Also for best quality, can no more food than you will use within a year unless directions for a specific food provide other advice.

Do not store jars above 95° F or near hot pipes, a range, a furnace, in an uninsulated attic, or in direct sunlight. Under these conditions, food will lose quality in a few weeks or months and may spoil. Dampness may corrode metal lids, break seals, and allow recontamination and spoilage.

Accidental freezing of canned foods will not cause spoilage unless jars become unsealed and re-contaminated. However, freezing and thawing may soften food. If jars must be stored where they may freeze, wrap them in newspapers, place them in heavy cartons, and cover with more newspapers and blankets.

Identifying and Handling Spoiled Canned Food

Do not taste food from a jar with an unsealed lid or food that shows signs of spoilage. You can more easily detect some types of spoilage in jars stored without screw bands. Growth of spoilage bacteria and yeast produces gas that pressurizes the food, swells lids, and breaks jar seals. As each stored jar is selected for use, examine its lid for tightness and vacuum. Lids with concave centers have good seals.

Next, while holding the jar upright at eye level, rotate the jar and examine its outside surface for streaks of dried food originating at the top of the jar. Look at the contents for rising air bubbles and unnatural color.

While opening the jar, smell for unnatural odors and look for spurting liquid and cotton-like mold growth (white, blue, black, or green) on the top food surface and underside of lid.

Spoiled low-acid foods, including tomatoes, may exhibit different kinds of spoilage evidence or very little evidence. Therefore, all suspect containers of spoiled low-acid foods, including tomatoes, should be treated as having produced botulinum toxins, and handled carefully in one of two ways:

- If the swollen metal cans or suspect glass jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container or dispose in a nearby landfill.
- If the suspect cans or glass jars are unsealed, open, or leaking, they should be detoxified before disposal.

Detoxification process: Wear disposable rubber or heavy plastic gloves. Carefully place the suspect containers and lids on their sides in an 8-quart volume or larger stockpot, pan, or boiling-water canner. Wash your hands with gloves thoroughly. Carefully add water to the pot and avoid splashing the water. The water should completely cover the containers with a minimum of a 1-inch level above the containers. Place a lid on the pot and heat the water to boiling. Boil 30 minutes to ensure detoxifying the food and all container components. Cool and discard the containers, their lids, and food in the trash or dispose in a nearby landfill.

Cleaning up the area: Contact with botulinum toxin can be fatal whether it is ingested or enters through the skin. Take care to avoid contact with suspect foods or liquids. Wear rubber or heavy plastic gloves when handling suspect foods or cleaning up contaminated work surfaces and equipment. A fresh solution of 1 part unscented liquid household chlorine bleach (5 to 6% sodium hypochlorite) to 5 parts clean water should be used to treat work surfaces, equipment, or other items, including can openers and clothing, that may have come in contact with suspect foods or liquids. Spray or wet contaminated surfaces with the bleach solution and let stand for 30 minutes.

Wearing gloves, wipe up treated spills with paper towels being careful to minimize the spread of contamination. Dispose of these paper towels by placing them in a plastic bag before putting them in the trash. Next, apply the bleach solution to all surfaces and equipment again, and let stand for 30 minutes and rinse. As a last step, thoroughly wash all detoxified counters, containers, equipment, clothing, etc. Discard gloves when cleaning process is complete. (Note: Bleach is an irritant itself and should not be inhaled or allowed to be exposed to the skin.)

Temperatures for Food Preservation

Temperature(s)	Effect
240 to 250°F	Canning temperatures for low acid vegetables, meat, and poultry in a pressure canner.
212°F	Temperature water boils at sea level. Canning temperature for acid fruits, tomatoes, pickles, and jellied products in a boiling-water canner.
180 to 250°F	Canning temperatures are used to destroy most bacteria, yeasts, and molds in acid foods. Time required to kill these decreases as temperatures increase.
140 to 165°F	Warming temperatures prevent growth, but may allow survival of some microorganisms.
40 to 140°F	**DANGER ZONE.** Temperatures between 40°F - 140°F allow rapid growth of bacteria, yeast, and molds.
95°F	Maximum storage temperature for canned foods.
50 to 70°F	Best storage temperatures for canned and dried foods.
32°F	Temperature water freezes.
32 to 40°F	Cold temperatures permit slow growth of some bacteria, yeasts, and molds.
-10 to 32°F	Freezing temperatures stop growth of microorganisms, but may allow some to survive.
0 to -10°F	Best storage temperatures for frozen foods.

Water Boils at Lower Temperatures as Altitude Increases

Altitude (in feet)	Temperature at which Water Boils
10,000	194°F
8,000	197°F
6,000	201°F
4,000	204°F
2,000	208°F
0 (Sea Level)	212°F

Causes and Possible Solutions for Problems with Canned Foods

Problem	Cause	Prevention
Loss of liquid from glass jars during processing. Do not open to replace liquid. (Not a sign of spoilage)	1. Lowering pressure in canner suddenly, after processing period.	1. Do not force pressure down by placing canner in a draft, opening the vent too soon, running cold water over the canner, etc. Allow pressure to drop to zero naturally; wait 10 minutes before opening after weight is removed from canner lid.
	2. Fluctuating pressure during processing in pressure canner.	2. Maintain a constant temperature throughout processing time.
	3. Failure to work out air bubbles from jars before processing.	3. Remove by running a plastic spatula or knife between food and jar before applying lids.
	4. Imperfect seal.	4. Use new flat lids for each jar and make sure there are no flaws. Pretreat the lids per manufacturer's directions. Use ring bands in good condition – no rust, no dents, and no bends. Wipe sealing surface of jar clean after filling, before applying lid.
	5. Ring bands not tight enough.	5. Apply fingertip-tight over flat lid, but do not overtighten.
	6. Jars not covered with water in boiling water canner.	6. Jars should be covered with 1 to 2 inches of water throughout processing period.
	7. Starchy foods absorbed liquid.	7. Make sure dried beans are completely rehydrated prior to canning. Use hot pack for other starchy foods. Otherwise, none
	8. Food packed too tightly in jars cause boil over during processing.	8. Leave the appropriate headspace.
Problem	**Cause**	**Prevention**
Imperfect seal (discard food unless the trouble was detected within a few hours)	1. Chips or cracks in jar sealing surface.	1. Examine carefully before applying lid by observing and carefully rubbing finger around the mouth of the jar.
	2. Failure to properly prepare flat lids.	2. Follow manufacturer's directions.
	3. Particles left on mouth of jar.	3. A clean, damp cloth should be used before applying flat lids to remove any seeds, seasonings, etc.
	4. Using bad ring bands.	4. Use ring bands in good form – no rust, dents, or bends.

	5. Ring bands not applied to correct tightness.	5. Apply fingertip-tight over flat lid, but do not overtighten.
	6. Inverting jars after processing or lifting jars by tops while hot.	6. Use jar lifter for removing jars from canner, placing below ring band. Leave jars in upright position.
	7. Fat on jar rim.	7. Trim fat from meats. Add no extra fat. Wipe jar rim well.
Product dark at top of jar (not necessarily a sign of spoilage)	1. Air left in the jars permits oxidation.	1. Remove air bubbles before sealing jars. Use recommended headspace.
	2. Insufficient amount of liquid or syrup to cover all food in jar.	2. Cover product completely with water or syrup.
	3. Food not processed after filling jars and applying lids.	3. Process recommended length of time.
Problem	**Cause**	**Prevention**
Color changes that are undesirable	1. Contact with minerals such as iron, zinc or copper in cooking utensils or water.	1. Avoid these conditions by using carefully selected cooking utensils. Use soft water.
	2. Over processing.	2. Follow directions for processing times and operation of canners.
	3. Immature or over mature product.	3. Select fruits and vegetables at optimum stage of maturity.
	4. Exposure to light.	4. Store canned foods in a dark place.
	5. May be a distinct spoilage.	5. Process by recommended method and for recommended time.
	6. Natural and harmless substances in fruits and vegetables (pink or blue color in apples, cauliflower, peaches, or pears)	6. None.
Cloudy liquid (sometimes denotes spoilage)	1. Starch in vegetables.	1. Select products at desirable stage of maturity. Do not use over mature vegetables. If canning potatoes, use fresh boiling water to cover and not cooking liquid from preparing hot pack.
	2. Minerals in water.	2. Use soft water.
	3. Additives in salts.	3. Use pure refined salt (pickling or canning salt) without additives.
	4. Spoilage.	4. Prepare food as directed with published canning process. Process by recommended method and for recommended time.
Sediment in jars (not necessarily a sign of spoilage)	1. Starch in vegetables.	1. Select products at desirable stage of maturity.
	2. Minerals in water.	2. Use soft water.

	3. Additives in salts.	3. Use pure refined salt (pickling or canning salt) without additives.
	4. Yellow sediment in green vegetables or onions.	4. None (natural occurrence).
	5. White crystals in spinach.	5. None (natural occurrence).
	6. Spoilage.	6. Prepare food as directed with published canning process. Process by recommended method and for recommended time.
Problem	**Cause**	**Prevention**
Spoilage	1. Poor selection of fruits and vegetables.	1. Select product of suitable variety and at proper stage of maturity. Can immediately after harvest if possible.
	2. Incorrect processing temperature used.	2. Low acid vegetables and meats must be pressure canned for safety. Most fruits and pickles can be canned in boiling water. Process jams and jellies in a boiling water canner after filling jars.
	3. Incorrect process time.	3. Follow our research-based recommendations for canning foods. Follow directions for operation of canners and timing of processes. Do not overfill jars.
	4. Incorrect pressure.	4. Dial gauges should be checked every year for accuracy. Follow directions for operation of canners.
	5. Imperfect seal on jar.	5. Check jars and lids for defects before using. Wipe jar rim before closing. Do not overfill jars.
Floating (especially some fruits)	1. Fruit is lighter than sugar syrups.	1. Use firm, ripe fruit. Heat before packing. Use a light to medium syrup instead of heavy syrup.
	2. Air trapped in food pieces.	2. Use hot packs.
	3. Improper packing.	3. Pack fruit as closely as possible without crushing it. Release trapped air bubbles and readjust liquid level before applying lids. Make sure liquid covers food pieces completely.

Causes and Possible Solutions for Problems with Canned Fruit Juices

Problem	Cause	Prevention
Fermentation or Spoilage	1. Failure to process adequately.	1. Filled jars of juices should be processed in a boiling water canner long enough to destroy spoilage organisms.
	2. Imperfect seal.	2. Use recommended canning methods and processing times. Use new flat lids for each jar and make sure there are no flaws. Pretreat the lids per manufacturer's directions. Use ring bands in good condition – no rust, no dents, and no bends. Wipe sealing surface of jar clean after filling, before applying lid. Filled jars should be processed in a boiling water canner long enough so a vacuum seal will form after cooling the jars.
	3. Air left in jars.	3. Proper application of two-piece canning lids and boiling water processing will exclude air from jars before the lid seals.
Cloudy sediment in bottom of jar	1. Solids in juice settle.	1. Minimize by straining juice before canning. Canned juice may be strained and made into jelly. Shake juices if used as a beverage.
	2. See spoilage, above.	
Problem	**Cause**	**Prevention**
Separation of tomato juice	1. Enzymatic action after cutting of raw tomatoes.	1. Heat tomatoes quickly to a simmering temperature immediately after they have been cut. To prevent juice from separating, quickly cut about 1 pound of fruit into quarters and put directly into saucepan. Heat immediately to boiling while crushing. Continue to slowly add and crush freshly cut tomato quarters to the boiling mixture. Make sure the mixture boils constantly and vigorously while you add the remaining tomatoes.
Poor flavor	1. Immature, overripe, or inferior fruit used.	1. Use only good quality, firm, ripe fruit or tomatoes for making juice.
	2. Use of too much water for extracting fruit juice.	2. Use only amount of water called for in directions. No water is added to tomatoes.
	3. Improper storage.	3. Stores jars in cool, dark, and dry storage area.

References:

Adapted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, NIFA-USDA (Revised 2015). Page reviewed February 2, 2017.

This document was extracted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA (Revised 2015).

Adapted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA (Revised 2015), Guide 1, pp. 1-25 to 1-27, and "So Easy to Preserve", 6th ed., p. 34.
This document was adapted from "So Easy to Preserve", 6th ed. 2014. Bulletin 989, Cooperative Extension Service, the University of Georgia, Athens. Revised by Elizabeth L. Andress. Ph.D. and Judy A. Harrison, Ph.D., Extension Foods Specialists.

Classroom Preparation Assignment #5

Condiments and Canning

Name: _____ Date: _____

1. Explain how condiments are the building blocks of the Garde Manger?
2. Give four examples of these building blocks.
3. The text describes condiments as "boldly flavored supporting actors for the plate. Describe two ways they are used

4. Give three examples of relishes from the text
5. Swedish mustard sauce goes especially well with?
6. Are compotes always sweet?

7. Chutney's are India's gift to the culinary world where they primarily eat a _____ based diet.

8. The two pickles we will concern ourselves with in the text are _____and _____.

9. Which part of the jar lids must be discarded after the contents are used?

10. Why do we boil the jars when canning?

Chapter 6:
Cold Sauces, Salads, and Sandwiches

Cold Sauces

What do sauces do for a dish? In short, sauces add color, texture, sheen (shine), moisture, and flavor. Sauces should complement rather than clash with the food; likewise, they should not overpower the food. If you cannot taste the dish because the treatment is overwhelming, it is a failure. Here is an example. We know that white pepper is strong and a little bit goes a long way. If you make a béchamel sauce and go too heavily on the white pepper, you have a white pepper sauce. Your tongue cannot taste the smoothness of the cream or the sweetness of the onion pique. The challenge we face in Cajun and Creole cooking is to balance the spices to accentuate the food and not mask it.

Sauces Relating to the Garde Manger

- **Cold emulsion sauces- vinaigrettes and mayonnaise**
- **Dairy based sauces and dressings**
- **Contemporary sauces- foams and international**
- **Salsas**
- **Coulis and purees**
- **Coating sauces - aspics and chaud- froid**
- **Miscellaneous sauces - Cumberland, horseradish, mignonette**

Cold Emulsion Sauces

When we make an emulsion sauce, we are combining two polar opposites that do not blend easily. Think of oil and vinegar; they separate right? We need something to stabilize the two so that they can mix. We often do this with Dijon or whole grain mustard, honey, and spices. When making mayonnaise, a little mustard in the vinegar agitated by the whisk will begin the basis of an emulsification allowing minute amounts of oil to be taken in by the vinegar. The same thing happens with a vinaigrette.

There are two types of emulsions- temporary and permanent. If you walk down the grocery isle where the salad dressing are, you will see vinaigrettes and Italian dressing that seem separated into two distinct levels. Shake one up and see that it combines for a while and then separates again. This is a temporary emulsion. Others seem to stay homogenous the entire time. These are known as permanent and have adjuncts like agar or guar gum to keep the ingredients in suspension.

Making a Basic Vinaigrette

As a general rule use one part acid to two or three parts oil when making vinaigrettes. The acid can come from vinegar, apple cider vinegar, red wine vinegar, white wine vinegar, champagne vinegar, sherry vinegar, and or citrus juices. The key is to find a balance of flavor where the oil does not overpower the acid with richness. Sometimes this is achieved aside from the simple ratio by adding stock, water, or sugar.

Once the dressing is made dip a bite of lettuce in and taste until you have the right combination. As with all salads presented in fine dining, dress the greens prior to service and lightly so all the greens are coated but without dressing pooling on the plate.

Making an Emulsified Vinaigrette

Use the same ratios as with basic vinaigrettes, but create a stable emulsion with the addition of adjuncts that will help to keep the emulsion in suspension. Chefs often use egg yolks, mustards, purees, garlic, herbs, honey, or even glace to achieve this. Follow these simple steps when making an emulsified vinaigrette.

- Place the acid, emulsifier (egg yolk, mustard, etc.), seasoning (salt, pepper, dry herbs) in the mixing bowl. (If using fresh herbs wait until service time to add).
- Whisk these ingredients to dissolve the salt and start the emulsion.
- Slowly drip the oil in as you whisk. As the emulsion forms, you may increase the stream gradually but only whisk while adding oil. Whisking alone does no good to the dressing and can cause graying from bowl friction.
- Add any garnishes and check for seasoning by tasting. Refrigerate for service.

Making Mayonnaise

Exercise care when making mayonnaise to avoid cross contamination and time temperature abuse. Remember that each yolk can handle 6-8 ounces of oil. The addition of a little water to the yolks can facilitate the absorption of the oil by the yolks. As with vinaigrettes, add the seasonings before the oil to help with the dissolving of the salt. Follow these steps.

- Select your mise en place- oil, yolks, lemon juice, Dijon, water, oil and salt.
- Place the yolk or yolks into the mixing bowl with a teaspoon of water per yolk.
- Add the salt and a squeeze of lemon juice and a teaspoon of Dijon mustard.
- Whisk this until an emulsion starts.
- Slowly drizzle the oil as you whisk.

Tips: The ingredients should all be the same temperature. A wet towel, spun like a whip and tied into a circle will hold the bowl still while you use one hand to whisk and the other to drizzle oil. The more water you add, the whiter the mayonnaise will turn and the more oil will absorb for larger quantities. If the mayonnaise is too thick for your purpose, it can be thinned with acid or water. Mayonnaise can serve as a base and can be varied by the addition of a wide variety of flavors. Store mayonnaise under refrigeration and keep on longer than seven days.

Other sauces such as chaud froid and aspic will be covered later when the subject of terrines, pates, and galantines are made in lab.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Salads - Green Salads, Side salads, and Composed Salads

Green Salads

Just as the word 'sausage' comes from the Latin, s***alsus,*** so too we owe the Romans for our word for salad. If fact salads made classically are always salted. Today we enjoy a great diversity of salad greens and styles. Commercially cut, bagged, and mixed salad greens have dominated the market for years. Just remember to rehydrate these greens in a chilled water bath and spin them before holding in the cooler. This will refresh the greens and make for a crisp salad verses a limp dull one. Still there are options for chefs today.

- **Delicate or mild greens-** red leaf lettuce, green leaf lettuce, iceberg, Boston, and romaine lettuce
- **Bitter greens-** escarole, frisée, arugula, watercress, mache, radicchio and endive
- **Peppery or spicy greens-** watercress, mizuno, tot-soi, amaranth, and mustard greens
- **Prepared mixed greens-** Mesclun mix, Field Mix (baby mix), Romaine and iceberg blends with or without color (the addition of shredded carrots and red cabbage) Oriental mix
- **Herbs and flowers (edible)**
- **Micro greens**- especially used for garnish

Caring for Salad Greens

- Wash lettuce greens, but be careful. Often gently plunging them into a chilled water bath will allow dirt and grit to fall away to the bottom. Be certain to remove any remaining ice particles left behind so they do not melt in the plate of bowl later.

- Dry the greens completely to remove excess water and aid the dressing in clinging to the greens. Use the large spinners for sturdy hearty greens and the smaller hand spinners for the delicate greens.

- Store in the cooler with a moist covering to stay crisp, being careful not to weight down. Keep fluffy and use within two days.

- Remember that cutting often leads to discoloration, especially with commercial cutters. Tearing is preferred but is a matter of preference.

Dressing Salads for your Guests

Mise En Place- Mixing bowl, salt, greens, garnish, dressing, serving vessel

- Place a portion of salad greens in the mixing bowl and lightly season with salt.
- Drizzle a small amount of dressing over the greens- 2oz. greens to ½ or ¾ oz. dressing.
- I prefer to use gloved hands to lift and toss the greens so that all the leaves are lightly coated with the dressing. Place on the serving vessel.

Garnish Options

- Seasonal vegetables
- Textured components like crackers or croutons or baked vegetable chips
- Toasted nuts and or dried fruits
- Shaved cheese
- Micro greens

Side Salads

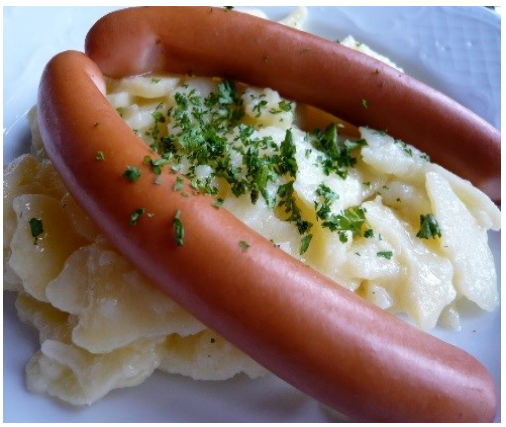
Side Salad example: Flickr

Side salads are made with a wide variety of ingredients from legumes, grains, pastas, fruits, and vegetables. They offer the chef a palate to create choices that can cater to international flavors or offer a direction into nutritional requirements.

Legume Salads

It is important to note that different bean varieties cook at different rates and you should account for this by cooking beans separately. Cook them until they are tender and have a creamy center when tasted. Try to dress legume salads no more than a few hours before cooking, as they tend to become tougher in vinaigrette dressings. Perhaps you could use a batch method and prepare smaller quantities of dressed legumes as needed so that if any are leftover they may be used the next day without ill effect of resting in the dressing too long.

Potato Salads



American and German Potato Salads- Commons.Wikimedia.org

In the Deep South, we enjoy an American style creamy potato salad made with copious amounts of mayonnaise and or mustard. Often boiled eggs, pimentos, and sometimes finely diced onions and celery can be found in potato salad. It is a favorite in the Bayou Region of Louisiana with gumbos and stews served also with rice.
Remember when boiling the potatoes that waxy varieties hold their shape better than starchy varieties so monitor their doneness during the cooking process.

Be open to trying recipes for potato salad that have their roots in Europe also because they offer a variety of delicious options to expand your palate and culinary repertoire. Most of these utilize a vinaigrette, are dressed, served warm, and are especially delicious with German dishes.

Pasta and Grain Salads


Pasta salad and grain salad of couscous and bulgur- commons.wikimedia.org

Grains and pastas should always be fully cooked but not overcooked. Al dente is good when making a pasta dish but not a salad. Pastas and grains will absorb the dressing readily and therefore you may need to re-dress the salad if serving leftovers later.

Fruit Salads

Fruit Salad- commons.wikimedia.org

Use care when making fruit salads. Certain fruits oxidize and turn brown; avoid this by using acidulated water or lemon juice on fruits like apples once they are sliced. Learn the supreme cut when using citrus so that the flesh of the fruit gives its best presentation and is absent of pith. Remember that fruit salads are highly perishable so the batch production method will avoid loss of product and food cost.

Several herbs are complimentary with fruit; they include basil, tarragon, lemongrass, and lemon verbena. Taste and create your own dish.

Composed Salads

A composed salad classic- Salad Nicoise (French) Commons.wikimedia.org

Composed salads are carefully arranged salads that often have a protein element. We see them mostly as entrée salads today and a favorite seen all the time is a grilled chicken salad. Above the Salad Nicoise features tuna that is lightly seared and served with blanched haricot verts, tomatoes, olives, boiled eggs, potatoes and a vinaigrette. Be careful to utilize color well, offer complimentary components, and make you composition pleasing to the eye.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Sandwiches

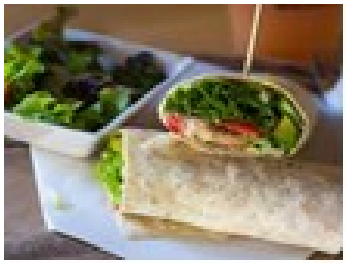
John Montague, the Fourth Earl of Sandwich- Wikipedia

We owe the sandwich to John Montague, the fourth Earl of Sandwich (1718-1782). The Earl was an infamous gambler who in an effort to keep his winning streak going, ordered his servant to fill some bread with meat. Webster's Dictionary defines a sandwich as two or more pieces of bread with a filling in between. Today the sandwich has come a long way from salted meat between two pieces of bread. We now see a sandwich as an edible encasement, usually starchy in nature and filled, keeping the fingers clean while holding the other components together.

At the very base of 'sandwich types' there are hot sandwiches, cold sandwiches, and finger or tea sandwiches. Today, we have a modern approach to sandwiches that includes:

- Multi-decker sandwiches- like the classic Club Sandwich
- Open faced sandwiches- like the Kentucky Hot Brown Sandwich
- Tea of Finger sandwiches
- Wraps
- Mini or Slider sandwiches





Examples of sandwiches by type- Wikipedia and Flickr

Sandwich Components

Sandwiches, for our discussion, concentrate on these primary ingredients: bread, spread or flavoring base, filling, and garnishes that harmonize with the filling. Above all else follow this rule. **Use Quality Ingredients!**

Breads

Today we enjoy a tremendous array of breads to use in sandwich making. Many are specific to sandwich styles. Pullman loafs are wonderful for most cold sandwiches including tea sandwiches because they are sturdy breads which can be sliced thinly. Similarly, prepared sliced moist sandwich breads can easily be separated from their crusts and used to make delightful finger and tea sandwiches. One of my most fond memories from childhood was when my mother would bring home a little box of tea sandwiches from one of her teas or luncheons. Some were finger sized and narrow while others were in tiny circles with chicken salad or ham salad fillings. Here are some choices available to the chef today:

- **Pullman loaves** - shaped like a railcar and normally unsliced

Pullman loaf, wikipedia.org

- **Rolls**, hard, soft, hot dog, hamburger, Po boys

- **Ciabatta**

Ciabatta Roll- wikipedia.org

- **Whole wheat**

Whole wheat bread- wikipedia.org

- **Rye and Pumpernickel**

Rye bread- wikipedia.org

- **Pita bread**

Pita bread- wikipedia.org

- **Focaccia**

Focaccia Bread- wikipedia.org

- **Nut and fruit breads**

Banana Bread- Wiki commons

Best practices for breads include:

- purchasing daily when possible
- keeping soft breads tightly wrapped
- avoiding wrapping of hard breads (but serve one day only)
- store at room temperature if used in one day
- may be frozen but not refrigerated

Sandwich Spreads and Their Purposes

- Spreads add flavor and harmony to the sandwich
- Spreads compliment the ingredients used in the sandwich
- Spreads add moisture and mouthfeel
- Spreading soft butter prior to the spread keeps the bread from becoming soggy if making ahead of service.

Popular Spreads in Sandwich Making

- Pesto
- Flavored Mayonnaise varieties
- Tapenade - Muffaletta
- Hummus
- Guacamole
- Romesco
- Various mustards
- Liver Pate- the authentic Bahn Mi

Muffaletta-Wikimedia.org **Bahn Mi- Wikimedia.org**

Sandwich fillings should be the focal point of the sandwich. Today chefs let their imagination run wild when picking ingredients for sandwich making. Many popular focal points include cheeses, meat, seafood, poultry, fish, salads, and vegetables. Communities around the country have special contests for prize winning sandwiches. Decatur, Georgia hosts the best Grilled Cheese Sandwich cook-off among local chefs each fall season.

Popular Protein Fillings include:

- Roast beef
- Small steaks
- Corned beef/Pastrami
- Ham, Bacon
- Roast pork
- Barbeque Meats or seafood
- Roast Turkey
- Chicken breast
- Cured meats
- Liverwurst

The now famous "Media Noche" or "Cuban" utilizes both ham and roasted pork with pickle and mustard on a hoagie style bread.

Popular Cheeses include:

- Cheddar
- Swiss
- Provolone
- Cream cheese
- Mascarpone
- Process cheese
- Cheese spreads

Fish and Shellfish Fillings:

- Tuna
- Shrimp
- Fried fish such as Clams or Soft Shell Crab
- Grilled fish
- Sardines
- Smoked Salmon

Shrimp Po Boy- Wikimedia.org

Bound Salad Sandwiches include:

- Tuna salad
- Egg salad
- Chicken, or Turkey salad
- Ham salad
- Shrimp salad
- Lobster Salad

Tuna Salad Sandwich-Wikimedia.org

Garnishes add flavor, texture, and moisture to a sandwich, setting it far apart from John Montague's first sandwich of salted meat and bread. Popular ones include bacon, lettuce, tomatoes, sprouts, avocados, pickles, and pickled vegetables. Vegetarian options are very popular today and one could create a terrific such sandwich from most of the ingredients above.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Classroom Preparation Assignment #6

Cold Sauces, Salads, and Sandwiches

Name: _____ Date: _____

1. What four things do sauces do for a dish?

2. When making cold emulsion sauces we are combining polar opposites, therefore we need something to _____ the two.

3. A moist towel that is spun and tied into a circle allows you to do what?

4. Describe the steps in "Caring for Salad Greens".

5. Name three bitter salad greens

6. When making salads from legumes it is important to do what two things?

7. Which type of potatoes fold their shape better when boiled for salads, waxy or starchy?

8. Because pasta salads tend to absorb dressing, what can we do to help it before serving the next day?

9. What do we call a carefully arranged salad that often has a protein element?

10. Whom do we owe the sandwich too?

11. Name five types of sandwiches.

12. Above all else, follow this rule when making sandwiches

13. Pullman loaves are normally

14. What does a soft butter spread do for a sandwich?

15. Name three bound salad fillings.

Chapter 7:
Hors d' Oeuvre, Caviar and Buffet Presentation

What is the difference between appetizers and hors d'oeuvre? Here is the best way to distinguish between the two. Think of appetizers as the first course of a meal. Hors d' oeuvre on the other hand are typically small bites that are served during a cocktail hour before the meal seating. Hors d' oeuvre are typically "passed" or served on trays carried by butlers throughout a room of guests who have a glass of wine or a cocktail in one hand and a delightful hors d' oeuvre in the other.

Translated from the French, hors d' oeuvre means "outside the work". Though English has no equivalent to this, I have always explained it, so or not, that we think of it as something outside of the chef's normal day to day tasks. If you think of it, not every day do we have an event that requires such attention to passed hors d' oeuvre. There is a phrase the French use that I love when thinking of small bites – 'amuse bouche'. It means, "Excite the palate" or quite literally, "happy mouth". Many restaurants offer one of these bite sized hors d' oeuvre when you are seated and when done with thought it should offer a window into the chef's style or that evening's offerings.

Appetizers are part of a meal vs. Hors d' oeuvre, which are apart from the meal.

Types of Hors d'oeuvre

- **Hot-** sausages, smoked fish or meat, Potato Napoleon with caviar and sour cream etc.
- **Cold-** Pates, oysters, cheeses, crudités etc.
- **Finger food-** empanadas, wontons, deviled quail eggs, tea sandwiches
- **Canapés-** 1 or 2 bites- always consists of four parts
    - **Base**
    - **Spread**
    - **Primary ingredient**
    - **Garniture**

Finger sandwiches and canapés- commons.wikimedia.org

We've all heard of parties where the host serves "heavy hors d' oeuvre" and today this can encompass selections which go beyond the one or two bite norm which we have always thought of regarding hors d' oeuvre. At such receptions, these can be served from a stationary location with plates and utensils.

Hors D' Oeuvre Service Styles

- **Passed- Butler Style**
- **Stationary Buffet**

Passed - commons.wikimedia.org

Buffet- photo courtesy of Keith Hand Bridge Catering, Atlanta Georgia

International Interpretations

- England- Starters
- France- Hors d' Oeuvre
- Spain- Pinchos or tapas
- Greece- Mezzes
- Italy- Antipasti
- Russia- Rakuski

***Composed Hors d'oeuvre* are built from two or more ingredients that are more often than not made ahead in preparation for an event. Some common vehicles for presentation include barquettes, canapés, profiteroles, tartlets, bouchees, and spoons (either non-edible or edible).**

Barquettes and Tartlets

Barquettes are small boat shaped pastry shells (usually neutral in flavor) that hold various hors d'oeuvres, especially mousses. Tartlets are very similar except for their more rounded and often fluted shape. Barkettes should always have a fish or shellfish component because the boat shape signifies such.

Tartlet molds
Commons. Wikimedia.org

Fruit tartlet
Commons.wikimedia.org

When using the basic pate dough recipe it is important to roll the dough very thinly and invert the mold on top of the dough. Cut around the mold allowing some extra dough around the edge. This will allow room for the dough to fill the mold inside and reach the top of the sides. Press another mold inside the dough to contour the dough to the first mold.

Profiteroles

These are small hollow ball shaped puffs of baked pate a choux. They can be filled with sweet or savory ingredients.

Profiteroles. Goodfreephotos.com

Bouchees

Bouchees are made of puff pastry into tiny bowls with straight and often fluted sides. The tops can be cut away for garnish and the cylindrical bowl filled with a delicious filling. The photo shown is of a mini bouchees filled with crawfish etouffee and garnished with chives.

Mini-bouchees

Canapés
Photo credit: Marshall Welsh CEC Emeritus

Canapés

One of the most common forms you will see in catering hors d' oeuvre is the canapé. Think of it as a miniature open-faced sandwich with four parts.

- **Base**- usually a toast point
- **Spread**- this adds flavor, moisture, and helps the next part adhere to the base
- **Main ingredient**- meat, vegetable, mousse, cheese etc.
- **Garnish**- a must have to dress up the offering

Bases can also be a vegetable or fruit but must be strong enough to support the other ingredients. Today the use of Asian style soup spoons are popular and add the ability to use sauces that otherwise would create a mess. Lately the use of edible spoons made with a cracker dough have been introduced so the novelty of a completely edible delivery mechanism.

Spreads can made from compound butters, flavored cream cheeses or mayonnaises, and bound salads such as chicken, ham, tuna, or egg. It is helpful to finely cut the ingredients for a miniature presentation.

Main ingredients can carry the load of the primary flavor presented or can accompany another part. Perhaps your base is a truffle mayonnaise with earthy flavor; the main ingredient should complement the base in this case. Main ingredients should harmonize with other flavors in the recipe. In some cases, the primary ingredient could be a charcuterie item as in smoked fish or meat; either could be presented as a mousse. At other times cheese, vegetables, and fruits are used and at times together for variety among your guest's choices.

Garnishes must be proportional and consistent in size and placement when making canapés. They are however, little artful creations that "Wow" the guests. Some common garnishes include caviar, capers, chives, salmon roe, nuts, fruits, and herbs.

In conclusion, remember that completion of organized mise en place is essential to success when making all of these types of hors d' oeuvre. Store the ingredients at proper temperatures. Toast points should be wrapped and at room temperature, while spreads and main ingredients usually at 41°F or below. Always plan ahead, and adhere to a strict production schedule.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Caviar

As mentioned earlier, caviar can be used as an accompaniment for many hors d' oeuvre. Be open-minded if you have never tasted caviar. I love it; others not so much but one thing I have witnessed in years of teaching is that I am often surprised that many students who never had it like it when they approach it with an open mind. After all, we are in this together to become chefs; are we not? So here we go; let us learn about caviar.

What is caviar?

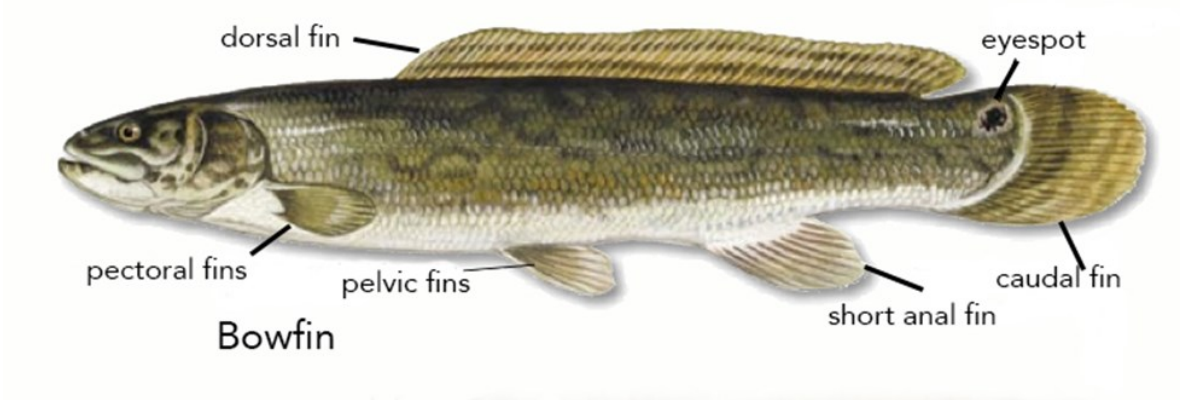
Caviar is the roe or "eggs" of the fish and only the roe from ***sturgeon*** fish is legally considered caviar. The roe can be 10-50% of the fish's weight and traditionally the Caspian Sea is where we harvest the most caviar in the entire world. Of the roe harvested in the Caspian, Russia produces 90% while Iran produces around 10%. It is important to note that California has White Sturgeon farms producing caviar here in America.

Caspian Sea- commons.wikimedia.org

The Acipenser or White Sturgeon- commons.wikimedia.org

Are there other Caviars?

Yes, you will see other fish roes labeled with the word caviar on the jars just as you see tomato bisque on a menu even though you know a bisque requires shellfish in the ingredients. When we go to a sushi restaurant, we often see "flying fish roe" and "salmon roe". On the grocery store dry shelf, we can find jars of "lump fish" labeled caviar. In the Bayou Region of South Louisiana, we have a unique player in the market for a prehistoric fish known at Choupique. Louisianans have long eaten this fresh fish in fried and fishcake forms. The fish must be kept alive, processed and eaten, or frozen right away or loses its goodness. The roe from the Choupique is harvested in winter months, and salted before canning in jars. It has a shiny jet-black color and is typically saltier that most sturgeon caviar.



The Choupique or "Bowfin"- commons.wikimedia.org

Caviar Quality

Caviar is graded several factors including consistency of grain (size), color, firmness, fragrance, flavor, gleam, and the vulnerability of the roe skin. Sizes and graded 000, 00, medium and small. Lighter colors are more favored and graded higher.

Caviar Preservation for Market

The addition of salt preserves the product for sale. Normally 5-8 % of the product's weight in salt is added but if the end-product is labeled **"Malossol"** it has only 2-3% salt by weight and is excellent. Malossol means "little salt.

Russian Malossol Osetra Caviar
commons.wikimedia.org

The Three True Caviars

- Beluga
- Osetra
- Sevruga

Beluga, Osetra, and Sevruga caviars- commons.wikimedia.org

Beluga Roe

Beluga is the largest but the most fragile roe. Its characteristics are soft, clear, and glossy eggs that are heavy and well separated. The color ranges from light silver-gray to black and is noted for a smooth creamy taste. The eggs have a dark eye, which is the embryo itself. As with most caviars, beluga is usually handled with a caviar spoon made of mother of pearl, bone, or other nonmetallic material. Metal utensils tend to impart an unwelcome metallic taste to the delicate and expensive roe. Beluga caviar is usually served by itself on toast, unlike other less expensive caviars that can be served in a variety of ways, including hollowed and cooked new potatoes, on a blini, or garnished with sour cream, crème fraiche, minced onion, or minced hard-boiled egg whites. These items can, however, be served with beluga as palate cleansers. Beluga caviar is the most expensive and always has a blue colored tin or jar lid.

Beluga Caviar-commons.wikimwdia.org

Osetra Roe

Osetra roe is dark brown to gray in color and has medium sized grain to the eggs. It is notably more nutty and oily in flavor than Beluga. Osetra caviar is one of the most prized and expensive types of caviar eclipsed in price only by Beluga caviar. It is obtained from the Osetra sturgeon that weighs 50-400 pounds and can live up to 50 years.

Osetra caviar varies in color from deep brown to gold. Lighter varieties are in greater demand as they have the richest flavor and come from the oldest of sturgeon. Golden Osetra is a rare form of Osetra caviar, and is golden-yellow in color with a very rich flavor. As with other caviars, Osetra is traditionally served on blinis with crème fraiche. Lower-grade varieties of caviar are used as stuffing in many seafood dishes, and some meat dishes. Caviar is often an addition to salads as well. Osetra caviar is always sold in tins or jars with yellow lids.

Sevruga Roe

The smallest of the true caviar roes, Sevruga is dark brown to gray in color, as is the Osetra. However, Sevruga has the strongest flavor of the three. It is also the least expensive and always sold in tins or jars with red lids. The starry sturgeon also known as stellate sturgeon or Sevruga is native to the Black, Azov, Caspian and Aegean Sea basins, but it has been extirpated from the last, and it is predicted that the remaining natural population will follow soon due to overfishing. The starry sturgeon is an anadromous species, which migrates up rivers to spawn.

Imperial Caviar

The most expensive caviar is beluga-albino caviar often called "Almas". Almas is produced from the eggs of a rare albino sturgeon between 60 and 100 years old, which swims in the southern Caspian Sea where apparently less pollution exists. Very few of the albino variety are left in the wild since the lack of melanin is a genetic disorder that only affects a few members of the species. A kilogram (2 lb. 3 oz.) of this almost white "black gold" is regularly sold for greater than $30,000. Any additions by producers diminish the value of the roe, and the caviar usually reaches the market without any additions or processing whatsoever.

Other forms of Caviar

Payusnaya - Russian meaning "Pressed"

This caviar is made from broken skins and is pressed into a marmalade type roe. It is a favorite of Russians who like to spread this on toast.

Kaluga

This is a farm-raised product from Siberia and China. The Kaluga (Huso dauricus) is a large predatory sturgeon found in the Amur River basin. Also known as the river beluga, they are claimed to be the largest freshwater fish in the world, with a maximum size of at least 1,000 kg (2,205 lb.) and 5.6 m (18.6 ft.). The Kaluga is one of the biggest of the sturgeon family. Like the slightly larger beluga, it spends part of its life in salt water. Unlike the beluga, this fish has five major rows of dermal scutes, nail-like teeth in its jaws, and feeds on salmon and other fish in the Amur. They have gray-green to black backs with a yellowish green-white underbelly.

The Kaluga has been hunted to near extinction for its valuable roe. Despite constant anti-poaching patrols, poachers continue to catch the fish. Fishing for Kaluga anywhere in the Amur River is an offense punishable by law. However, Kaluga's are known to have an aggressive nature and instances of them toppling fishing boats and drowning anglers have been reported, although no concrete evidence exists of them assaulting or hunting people.

Kaluga caviar - caviarstar.com

When purchasing caviar, use a reputable supplier. Store at 28-32°F unopened for up to 4 weeks. After opening use within 2-3 days.

Buffet Service

What are Buffets?

Buffets are self- service food presentations where the guests choose their selections from platters, chafers, and action stations. The goal of a buffet is three fold.

- Encourage the guests to "stock up" from economically produced foods
- Keep the guests moving
- To encourage the perception of sumptuous abundance

The arrangement and appearance of a buffet rest on two key factors.

- Lavishness
- Abundance

The appearance of an abundance of food beautifully laid out is exciting and stimulating to the appetite.

There are ways to create this look:

- Color
- Height
- Full platters and bowls
- Proper spacing
- Simplicity- design is important; the trick is not to overdesign. Below is a great example.
- Orderliness- simple yet beautifully arranged food with a consistent style

Photo courtesy of Keith Hand owner of Bridge Catering- Atlanta, Georgia

Menu and Service Sequence

Consider the following when arranging the buffet:

- Hot food are best served last.
- The most expensive items are usually placed after the lesser expensive ones.
- Place sauces and dressings adjacent to the items they go with.
- A separate dessert table is a good idea.
- Plates, of course, must be the first item on the buffet.

Photo courtesy of Keith Hand owner of Bridge Catering- Atlanta, Georgia

The Cocktail Buffet

- Tasty, well-seasoned, appetizer foods work best.
- Stacks of small plates at the start of the service point.
- Make the table easy to approach from all sides.

Photo courtesy of Keith Hand owner of Bridge Catering- Atlanta, Georgia

Determining the number of tables needed for your guests

Things to consider are the number of guests expected, the length of the serving time, the amount and type of service equipment needed, the type of menu, the style of service, the amount of décor desired, and the total floor space available for the function.

How to determine table space

Allocate approximately two running feet of buffet table for each food container or chafer. For three cold offerings, three hot offerings, and a condiment basket, you should set up a buffet table 14' to 16' long.

If you are setting up two 8' rectangular tables, you will need 48 square feet of floor space and approximately 150 square feet of standard 3' isle space around the table for guests to serve themselves. For this setup, the total space needed is 200 square feet.

For each 50 people you need a single sided buffet. For each 75 people you need a double-sided buffet.

If the group has 150, you must have two double sided buffets and so on.

Double-side buffet line – commons. Wikipedia

Centerpieces

Floral arrangements of cut flowers, potted plants, or foliage combined with candles, lights, and even ice carvings are excellent centerpieces. Avoid flowers with bold aromas as they interfere with the palate. Centerpieces should not interfere with the guest line of sight. For height use an "epergne"- a container with a slender center portion that obstructs less. Consider the state of the flower's usable lifespan on the day needed. If using roses in full bloom order" funeral roses, as they are in peak bloom. Store flowers between 38 and 45°F. If using ice sculpture be certain to have the proper drainage arrangement with the piece and a bucket hidden under the table skirting to catch melting

Classroom Preparation Assignment #7

Hors D' Oeuvres, Caviar, and Buffet Presentation

Name: _____ Date: _____

1. Explain the difference between hors d' oeuvres and appetizers.

2. Name the four types of hors d' oeuvres.

3. What are the four parts of a canapé?

4. Since barquettes are boat-shaped, they should always include what? _____or_____.

5. Bouchees are made from what?

6. The essential key to successful completion of hors d' oeuvres is

7. What fish can be considered as true and legal caviar?

8. What sea is the largest producer of this caviar?

9. What caviar is the pride of Cajun and Creole country?

10. Name three of the factors in grading caviar.

11. What is Malossol caviar?

12. List three characteristics of Beluga caviar.

13. How does the flavor of Osetra caviar differ from Beluga caviar?

14. Which has the strongest flavor of the three true caviars?

15. Which caviar is golden or olive in color (2 names)?

16. What is the definition of a buffet?

17. What is the threefold goal of a buffet?

18. In what ways does a chef create lavish abundance in the look of a buffet? (Six ways)

19. Should you put the most expensive food at the beginning of the buffet?

20. You will be serving 150 people at the buffet. How many buffets, and how many 'sides' do you need to conduct a smooth service?

Chapter 8:
Midterm Exam and Caviar Buffet Practical

This week you will put into practice the concepts of Buffet Presentation in the creation of a Caviar and Hors d' oeuvre Event. You will present an elegant buffet consisting of canapés and caviar complete with a Buckwheat Bellini and caviar station. After the event, you will break down the event, clean, and take your written midterm examination.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Midterm Tips

1. **Read and review the entire text up to this point.**

2. **Review any class notes that you took during lecture and review alone with the power point presentations that are in the LMS (Moodle®).**

3. **You may find it helpful to join or create a study group. If you have read the material prior to each class, completed any CPAs (classroom preparation assignments), and reviewed each week's learning outcomes after each class, then preparation for the midterm will be a breeze.**

This will be your first buffet of the semester. One tool that will help you to organize and meet your time requirements is a "load list". Using a load list ensures that you have all the materials, equipment, and food necessary to put on the buffet. Make the list by analyzing each item you are serving and ask yourself, "What do I need to show, serve, and eat this with? Example: Crawfish empanadas need:

1. The empanadas,
2. A pan to house them,
3. A chaffer to keep them hot,
4. A pitch to pour hot water in the chafer,
5. Sterno to light under the chafer,
6. A serving utensil,
7. Plates,
8. Napkins and so on.

Do not forget the tables, tablecloths, and skirting. Think about all of the things necessary for the event's preparation and service. You cannot just show up in class and pull this off. You must plan your work and work your plan.

Think about your product and presentation; I will provide access to the things you need, but it is your practical exam. If you put in the work and execute well you will do well.

Chapter 9:
Terrines, Galantines, Forcemeats, and Pates

Chef Welsh's Turkey and Cranberry Aspic En Croute
photo by Marshall Welsh CEC

Introduction

All of Europe and especially France have made the most significant pioneering developments in the storied categories of terrines, pates, galantines, and forcemeats. They run the gamut from country style and rustic to haute, grand and luxurious. It can be argued that these forms are the heart and soul of the art in the cold kitchen. Though rarely seen in ordinary eateries, there has been an indisputable movement in recent years concentrating on skills and technique that have brought this and many other long forgotten masterpieces back into the repertoire of kitchens across the greatest food hotspots in the world. The techniques are being broadened as this movement grows as in the example of salad creations utilizing aspic to bind layers and add intrigue and elevating the simplistic to new heights. In this chapter, we will explore forcemeats, which are the basis for making most of the items discussed.

Forcemeats

Think of forcemeats as the elemental ingredient in the preparation of most charcuterie creations of the Garde Manger. It is a lean meat emulsified with fat by grinding or processing in a food processor; often they are sieved and sometimes even pureed. The desired end result will dictate the procedures to use. Some products like a country pate may need to be rustic, therefore more toothsome and may simply require grinding while others may desire a smooth texture and benefit for processing, pureeing, and sieving. Using cold equipment and tasting prior to cooking are necessary to achieve a good product.

Forcemeats can be used for stuffing the centers of galantines, the making of sausages, quenelles to garnish platters, pates, terrines, roulades, and jabonnettes. Each forcemeat category has its own texture profile and we codify them into four categories.

Straight Forcemeats

These is made by combining pork meat and pork fat to another meat in equal parts. The meats and fat are cut into cubes, seasoned, cured, rested under chilled conditions, and processed via progressive grinding with cold equipment. Progressive grinding means to begin grinding with a coarse die and again with a smaller die.

Formula for Straight Forcemeats:

Pork and Fat

+

Dominant Meat

+

Seasonings/ Cure

Pork and Fat plus an equal amount of the dominant meat is the ratio.

Another way to create a forcemeat is to grind the parts above with a medium die and further process in a mixer or a food processor. At times, the binding is enhanced at this point by the addition of raw egg to the forcemeat. If a smoother texture is desired, the addition of heavy cream will accomplish this and add a richness to the end product.

An example of a terrine with the straight forcemeat method from class

During this process, take care to use ice baths to keep the emulsion chilled and test for consistency. Always cook a small amount to check for taste so that you may adjust seasonings prior to completion. Use a cooking method that is close to the one in your recipe. For example, if your galantine is poached, roll a small portion of the forcemeat in plastic wrap and form a tiny sausage; tie the ends and poach it. The flavor will not be changed due to caramelization that you will encounter if you pan fry the tasting sample. These straight forcemeats can be used to fill a pate en croute, terrines, and galantines.

Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

Country Style Forcemeats

These are more rustic, coarse in texture, bolder in flavor, and usually made with pork, pork fat, liver, and other garnish ingredients. I have also seen a country style pate that was made primarily of mushrooms. One technique when making country style forcemeats is to make the first grind with the coarse die and reserve some of the mixture while grinding the rest again through the medium die.

The twice ground portion is then added to a panada (a binder made of a starch and a liquid) and mixed before combining the two grinds together. The panada helps to bind the two grinds throughout and after the cooking process. This method could work very well with Cajun Andouille as traditionally we use a coarse die to achieve large chunks of smoked pork meat in the sausage.

An example of a Country Style forcemeat pate (Rabbit and Pistachio)
commons.wikimedia.org

Gratin Forcemeats

These forcemeats are a close cousin to straight forcemeats, but require a light searing of the meat that adds color and depth of flavor to the product. To do this work in small batches and use a hot pan. Sear the meats (usually a liver) lightly without cooking all the way through. Keep the fond on the pan and reserve the meat on a pan on the side after each batch. Cool before processing.

Some recipes call for aromatics such as finely diced shallots or onion and a flambé with brandy after caramelizing in the fond left behind by the meats. Chill this with the meats and process as you would a *straight forcemeat*. Progressive grinding and processing with the use of a panada will bind the product.

An example of the gratin consistency once processed- www. Flicker .com

Mousseline Forcemeats

These very lightly textured forcemeats used primarily with lean white fish, chicken, veal, and or shellfish. In most cases, the use of cream and eggs allows mousselines to have a light and airy texture. Below is a standard ration though you should always consult your recipe.

Lean white protein (1 lb.) + Salt (1 tsp.) + Egg or whites (1ea.) + Cream (8 oz.)

The procedure is to dice the protein and possibly grind if needed before processing. Process the meat and salt to a paste consistency. Note that certain shellfish as scallops may retain more water so be careful with the cream. Process with the egg white then follow with the cream. Scrape down the bowl during the process to reach a homogeneous blend for a consistent product. This process does not take long so do not over work the mousse. Very fine forcemeats maybe worked through a sieve or Tamis for the best consistency. This is especially true for rabbit as it has a sinew that should be worked out by the screen of the Tamis.

An example of various Sieves or Tamis- commons Wikimedia.org

Terrines

Terrines refer to pates that are made in an earthenware mold. They can be baked in a water bath (Bain Marie), or made in layered aspic as in the case of a cold vegetable terrine. Any style of forcemeat can be made into a terrine. Some can be enrobed in plastic wrap to help remove it from the mold while others are wrapped in bacon, ham, or vegetable for flavor and visual appeal. Still others are made in the style "En Croute" meaning to enrobe in a pastry crust while baking.

Terrines can be sliced from a loaf, or presented as an individual serving as in the case of rillettes. They normally are served as a course in a meal and can be a salad itself or accompanied by a salad.

A liver pate course served with a salad- commons. Wikimedia.org

CMC Rosendale cutting a vegetable terrine bound in aspic-commons.wikimedia.org

Basic steps for building a terrine include the following:

- **Line the terrine mold.** Traditional lining include thinly sliced fat back, bacon, ham, blanched and shocked green leeks, prosciutto, caul fat or even plastic wrap. When using plastic wrap gently mist the inside of the mold with water and lower the film inside using a towel or brush to press out the edges. Be certain to avoid air pockets between the mold and the lining.

- **Fill the lined mold.** With fine mousses, use a pastry bag. With country pates, you may wish to scoop some into your hand and throw it in to compress and avoid air gaps. A spatula in a good choice. After filling fold over the liner to encase the pate and tap the mold on the table to release any unwanted air. Cover with the lid before cooking.

- **Cook the terrine in a Bain Marie.** By placing the terrine in a water bath, we protect the product from heat extremes. Place a towel into a hotel pan. Place the filled and covered terrine mold on the towel and pour simmering water into the pan until it reaches most of the way up the side of the mold. Maintain the water temperature at 165°F. An oven temperature of 300°F should be fine.

- **Cook the terrine until you reach the correct internal temperature**. Here is the range below:

  - Fish, shellfish, and pork- 145°F
  - Beef, venison, lamb, and veal- 155°F
  - Poultry- 165°F

- **Cool, press and refrigerate the terrines.** Remove the fully cooked terrine from the water bath and cool on the table until the pate falls to 90°F. Place a wrapped press plate on the product with a 2-pound weight. Place in the refrigerator for several days to allow flavor to mature. The terrine may then be coated in aspic if desired or sliced and dipped in aspic as in the classic cold platter form. (More about aspic in chapter ten.)

CJFCI student Taylor Mason's Pulpo in Aspic Terrine

Aspic bound terrines

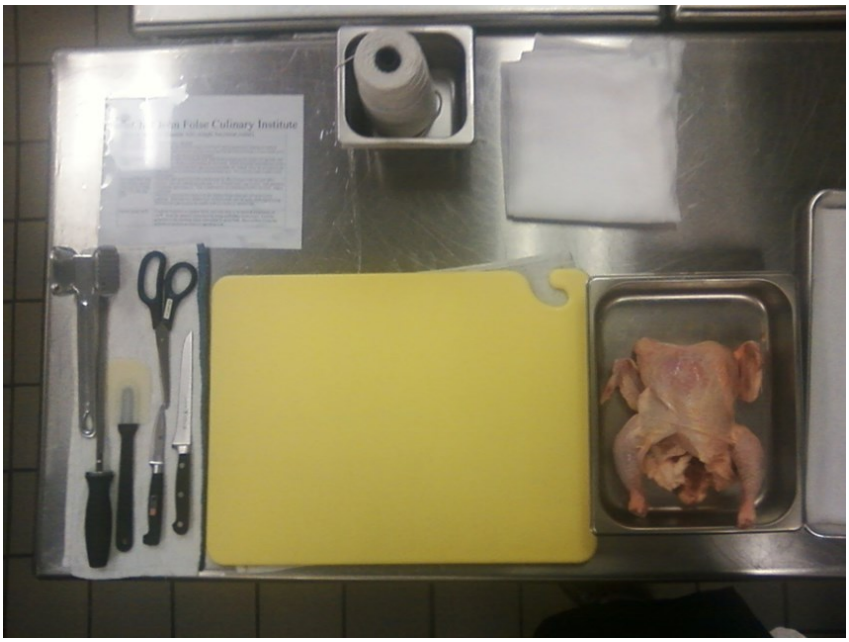
Important things to remember when using this technique is first to season the main ingredients as they are the starring cast members. Select a richly flavored stock to use as the aspic. Take care in their preparations; avoid cloudiness, and use only the amount necessary between layers. Speaking of layers, use an ice bath for the terrine mold and thoroughly chill each layer's aspic before the addition of subsequent layers to avoid the sliding of unbound layers. Think of the aspic as the mortar between layers of masonry.

Galantines

In most every case, a galantine is made with chicken and refers to chicken white meat stuffed with a dark meat (and often pork and fat) forcemeat rolled into a tube shape and enrobed in the skin of the very chicken just fabricated for the technique. The galantine is wrapped again in plastic or cheesecloth, poached to 165°F, chilled, sliced and coated with aspic, then served on a decorative chemise coated platter.

An example of a Chicken Galantine prepared by a student at CJFCI

Setting up for Galantine Production



Begin with good organization Mise En Place

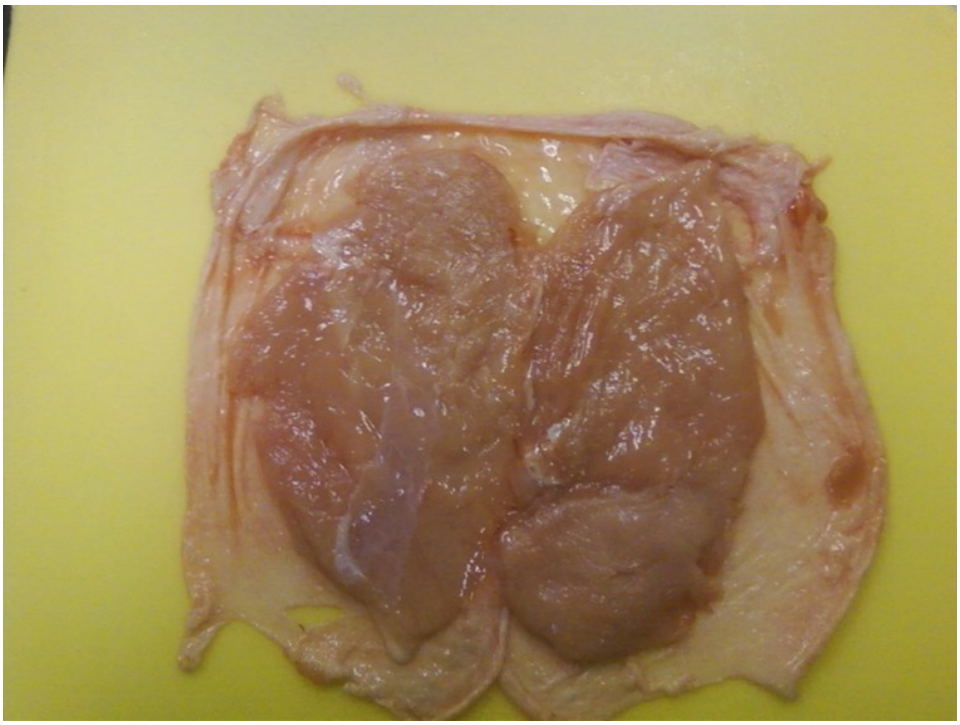
Remove the skin from the bird, starting with an incision along the back.

Square up the skin with the inside facing upward

Bone out the bird. Remove the tenders, breast and debone the legs.

Reserve the bones for stock and remove tendons from tenders.

Pound the tenders to and even thickness of ¼".



Arrange the breast, but along the long side. Rotate ¼ turn left from shown.

Combine ground chicken with spices and pork. Mix and chill.

Make an emulsion of the forcemeat with some ice in the processor.

Place some of the forcemeat over the breast; add tenders for garnish then more forcemeat.

Another layer of forcemeat over the garniture.

Wrap and transfer the galantine to plastic wrap.

Roll up the galantine. Press out the air and roll and twist ends. Tie the ends and poach to 165^{0}F.

Pictorial by Marshall Welsh CEC

Classroom Preparation Assignment #9

Terrines, Galantines, Pate, and Forcemeats

Name: _____ Date: _____

1. List the four categories of forcemeats

2. T or F. Circle one. Straight forcemeats combine pork and fat with a dominant meat in equal parts.

3. T or F. Circle one. Country style forcemeats are coarse in texture, bold in flavor, and usually have pork and liver in its ingredients.

4. What is a primary difference in gratin forcemeat that is not done with any other forcemeat?

5. What two ingredients allow mousselines to have a light and airy texture?

6. What is the technical term for the water bath used when baking a terrine?

7. Name three things that we can use as the liner in a terrine mold.

8. What should the internal temperature be for the following types of terrines?

Fish _____. Beef _____ Poultry_____.

9. What should you do when the temperature is reached in the terrine process?

10. Use of an _____ _____ helps to set the aspic layers in the aspic terrine process

Chapter 10:
Aspic and Cold Platter Creation

Historically, meat aspics were made before fruit- and vegetable-flavored aspics or 'jellies' (UK) and 'gelatins' (North America). By the middle Ages at the latest, cooks had discovered that a thickened meat broth could be made into a jelly. A detailed recipe for aspic is found in *Le Viandier*, written in or around 1375.

In the early 19th century, Marie-Antoine Carême created *chaud froid* in France. Chaud froid means "hot cold" in French, referring to foods that were prepared hot and served cold. Aspic was used as a chaud froid sauce in many cold fish and poultry meals. The sauce added moisture and flavor to the food. Carême invented various types of aspic and ways of preparing it. Aspic, when used to hold meats, prevents them from becoming spoiled. The gelatin keeps out air and bacteria, keeping the cooked meat fresh.

Aspic came into prominence in America in the early 20th century. By the 1950s, meat aspic was a popular dinner staple throughout the United States as were other gelatin-based dishes such as tomato aspic. Cooks show off aesthetic skills by creating inventive aspics.

Uses

Aspic can also be referred as aspic gelée or aspic jelly. Aspic jelly may be colorless (white aspic) or contain various shades of amber. Aspic can be used to protect food from the air, to give food more flavor, or as a decoration.

There are three types of aspic: delicate, sliceable, and inedible. The delicate aspic is soft. The sliceable aspic must be made in a terrine or in an aspic mold. It is firmer than the delicate aspic. The inedible aspic is never for consumption. It is usually for decoration. Aspic is often used to glaze food pieces in food competitions to make the food glisten and make it more appealing to the eye. Foods dipped in aspic have a lacquered finish for a fancy presentation. Aspic can be cut into various shapes and be used as a garnish for deli meats or pâtés.

Aspics were once more popular than as of late. Developed by the early Grade Manger in France for the purpose of creating a “chemise” or shirt- a coating for the lead platters and used to coat terrines, pates, and galantines, these aspics served as a flavorful gel turning to a sauce in one’s warm mouth. Aspics added flavor and protected the product from drying. During WWII in America, aspics were popularized because of rationing and the need to support the war effort. Thus, tomato aspics were a part of the menu when proteins were in short supply.

Coating sauces and Chaud-froids are the primary concerns of our discussion regarding cold platter creation. Aspics are made by adding gelatin to a flavorful stock while Chaud-froids are made by adding gelatin to warm sauces like béchamel, demi-glace, and veloute.

Aspics rely on stocks that are clarified as you would a consommé to avoid cloudiness. The addition of gelatin based on the required strength for the task at hand is done while the stock is warm. It is then cooled over an ice bath to reveal a thickened state. If allowed to set cold it can be used itself as a garnish or later warmed to coat a serving platter or cold pate.

Aspic used to bind Headcheese- commons.wikimedia.org

The galantine on the left above is coated in Chaud-froid; the terrine in the center is En Croute - Commons.wikimedia.org

Aspic Ratio Concentrations

- 2oz. per gallon for delicate coating
- 4 oz. per gallon for edible Chaud Froid
- 8 oz. per gallon for sliceable/moldable
- 12 oz. per gallon / tough non-edible (i.e. Chaud Froid platter)

Once the terrine or galantine is made, it can be divided with equally sized slices as illustrated in the photos. The slices are coated in aspic and a portion of the terrine is reserved to be the "grosse piece". The grosse piece is the focal point of the platter and is coated likewise in aspic. The coated slices are arranged from the edge of the grosse piece, and shingled over each other. The purpose is to convey movement, and draw the eye to the centerpiece or focal point. Of course, the platter should have some decorative aspect under the aspic. This is achieved by brushing aspic on the platter, attaching garnish, and covering with slightly tempered aspic on a level and cold platter. Allow the gel to strengthen before placing the grosse piece and slices.

A decorated platter with chemise by a student at CJFCI

Working with gelatin

Bloom powdered gelatin in cool water first then warm it to dissolve the granules before adding to the stock. Refer to the power point in the LMS (Moodle®) for more do's and don'ts about gelatin.

Classroom Preparation Assignment #10

Aspic and Cold Platter Creation

Name: _____ Date: _____

1. Aspics add _____ and protect terrine items from _____.
2. It is best to clarify a stock as you would a _____ before making the aspic.
3. What are the following ratios for gelatin to one gallon of stock or chaud froid?
Delicate coating _____. Edible Chaud Froid _____.
Sliceable/ moldable gelatin _____. Durable non-edible _____.
4. True or False. Circle one. The first step when working with gelatin is to bloom it in cool water.
5. Do you need to warm the bloomed gelatin to dissolve the granules?
6. What animal materials are used to create gelatin
7. Name three other form of gelatin.
8. List the five cardinal rules for aspic.
9. What is the base sauce for Chaud Froid?
10. Give three examples of natural coloring for Chaud Froid.

Chapter 11:
Sausage Making

The origins of meat preservation are lost to the ages but probably began when humans began to realize the preservative value of salt. Sausage making originally developed as a means to preserve and transport meat. Primitive societies learned that dried berries and spices could be added to dried meat. The procedure of stuffing meat into casings essentially remains the same today, but sausage recipes have been greatly refined and sausage making has become a highly respected culinary art.

Sausages come in two main types: fresh and cured. **Cured sausages** may be either cooked or dried. Most cured sausages are smoked, but this is not mandatory. The curing process itself changes the meat and imparts its own flavors. An example is the difference in taste between a pork roast and a ham.

All **smoked sausages** are cured. The reason is the threat of botulism. The bacterium responsible, Clostridium botulinum, is ubiquitous in the environment, grows in the anaerobic conditions created in the interior of the sausage, and thrives in the 4 °C (39 °F) to 60 °C (140 °F) temperature range common in the smoke house and subsequent ambient storage. Thus, for safety reasons, sausages are cured before smoking.

Sausage Classifications

Classification	Examples	Storage and Handling
Fresh sausage	Fresh pork sausage	Keep refrigerated. Cook bratwurst, bockwurst thoroughly before eating. Consume within 3 days or freeze
Uncooked smoked sausage	Smoked, country style, mettwurst, kielbasa.	Keep refrigerated. Cook thoroughly before eating. Consume within 7 days or freeze.
Cooked smoked sausage	Frankfurter, bologna, cotto salami	Keep refrigerated. Consume within 7 days of opening vacuum package
Dry sausage	Genoa salami, pepperoni	Does not require refrigeration.
Semi-dry sausage	Lebanon bologna, cervelot, summer sausage, Thüringen	For best quality, keep refrigerated.
Cooked meat specialties	Loaves, head cheese, scrapple	Keep refrigerated. Consume within 3 days after opening vacuum package

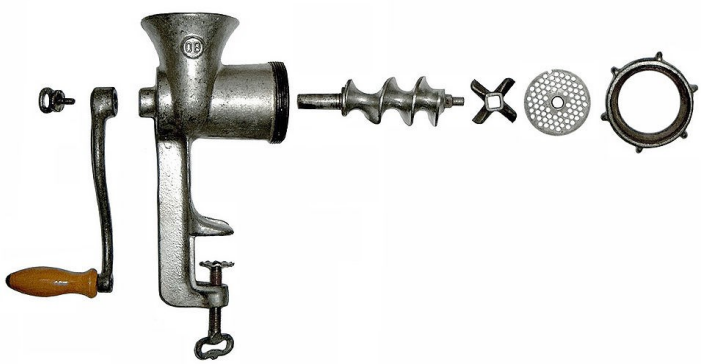
Some of the information discussed here will be familiar as it was touched on in Chapter Four - Charcuterie Production and Aging. It will do you well to have the opportunity to review and delve deeper into the growing trend technique that is driving the modern chef. So before you go further re-read the brief section in Chapter Four dealing with sausage.

Equipment Mise En Place

- **Safety first.** Make certain the grinder is unplugged and that the proper parts are gathered and in good working order, cleaned, sanitized, and free of rust. This will prevent cross contamination from rust and other protein sources.

- **Chill the assembly parts.** The grinder housing, the auger or worm, blade, the die plates, the cutter, and collar should all be chilled in an ice bath. This helps to keep the fat from melting which aids in a good emulsion for the sausage. If this step is skipped, the end product will become mealy and crumbly leading to dry sausage that bursts when grilled.

- **Take care in grinding.** Assemble the machine properly or the product will show poorly immediately. Do not cut the meat too big to fit down the grinder housing. Do not force it down too fast. Take your time to do it right, but get along with it to be efficient.



Manual meat grinder- commons.wikimedia.org

Once the housing is mounted and the order of assembly begins with the insertion of the worm. The blade fits over the end of the worm with the flat side outward toward you. The die (with the holes) goes on next and usually has a notch to be lined up on the housing. After this screw on the collar snuggly and plug in the machine.

Some sausages benefit from mixing the seasonings and cures with the diced meats and fats then resting before grinding. Others are ground first with meat and fat ground separately then seasoned and mixed. As always follow your recipe and thoroughly know your game plan before starting. The following describes a basic technique in sausage grinding.

Basic Grinding Technique

1. Chill the meat and fat to a temperature as close to freezing as possible, 30-32°F. Cut the meat into 1 or two inch pieces so that they easily fit the tube in the grinder housing. If the meat is cut into the proper size, it will go along smoothly when pulled in by the worm. If it is too big, the machine will strain to cut it. If the meat does not come out looking like ground beef leaving the die, if torn or has a fat pasty smooth texture, the assembly may be off. This is an indication that the blade may be on backwards. If you have a problem, stop the machine immediately; unplug it and disassemble the parts to see where the problem is. Your chef instructor will gladly help you back on track.

2. Mix the ground sausage product in an electric mixer on medium speed for a minute or so. This will help to evenly distribute the seasonings and fat throughout the mixture. Be sure the parts are chilled and that you do not over load the bowl when mixing.

3. Test the sausage for tasting before filling into casings. Try to cook the sausage in a manner that will be closest to the final product so that you get a true flavor. Poach a small portion if it is a poached sausage, Grill if grilled and so on.

Fermented Sausages

These dry and semi dry sausages, though ancient, are in great demand today with the resurgence in modernist movement. The lactic acid produced during the long curing time adds a tanginess that offers a palate for the chef to show other preservation skills through condiment and cheese pairings. The charcuterie board today is almost necessary for the menu today. Some examples or semi dry offerings are summer sausage or Lebanon Bologna (my father ordered Weavers brand when I was a child). A dry type would be our Saucisson Sec- a garlic and pork dry sausage cured in pork middles.

Important Tips for Fermented Sausages

1. Use salts and curing agents like nitrates, nitrites, and sugars like sucrose and dextrose with a ratio of roughly 65% meat to fat. The salts ward off bad bacteria and the sugars help in curing along with feeding the good bacteria. Some recipes call for an additive to help feed the good bacteria.

2. Mix the meat well to distribute the salts and sugars for a few days at very cold temperatures before adding the remaining seasonings and subsequent grinding. The temperature should be as close to freezing as possible.

3. Stuff the sausage with careful attention to avoid air pockets where bacteria can grow. Also, take care to keep the humidity around 60% in the storing chamber to allow the moisture inside to dry and prevent green mold growth on the surface of the casings. Semi dry sausages will lose around 15% of their weight through the process while dry sausages will lose up to 30%. If a white mold develops this is good. It is called Mycelium and is not harmful. A trip to the grocer will show many such dried sausages covered in this harmless mold

Saucisson Sec- commons.wikimedia.org

Emulsion Sausages

These sausages include frankfurters, bologna, and mortadella among others. The process utilizes a ratio of 5-4-3 forcemeat meaning that five parts of the recipe is made of trimmed raw meat. Four parts are pork fat from the belly, jowl, or plate. Three parts are water and usually comes from ice that is ground into the sausage using a buffalo chopper. This ensures a very cold emulsion and a final paste texture to the protein for stuffing.

1. Trim, cure, and grind the meat. Progressive grinding is good; just make certain that the final grind is very fine. Keep the meat cold through this process.
2. Grind the chilled fat and keep this cold.
3. Place the chilled ground meat into the buffalo chopper and process with the ice in stages allowing the ice to form an emulsion as you go. The goal temperature is 30°F.
4. Allow the temperature to rise to 40°F and add the ground fat to the mixture and process further until a rich smooth fluffy texture is reached.

5. At this point, add any remaining seasonings, powdered milk if necessary, and process again until the product temperature rises to 58°F. You are now in the temperature danger zone so quickly test the product and adjust seasonings before final casing, packaging, and refrigeration.

Stuffing with casings

1. **Gather sausage stuffer mise en place.** Clean the casing by running water through the casings and soak them in acidulated water prior to putting them on the stuffer. With the water running slowly open the end of the casing and thread it over the spigot. Wet the spigot and continue to feed the casing over it. When finished slide the casing back over the end of the tube, keeping the tube moist until full of casing. Attach the tube to the stuffer.
2. **Fill the stuffer cylinder with sausage.** Assemble the piston with "O-ring and place the stuffer cylinder on the base. Turn to press out any air from the machine and when sausage reaches the end of the tube pull the casing out and tie the end.
3. **Turn and fill the casing without too much pressure on the size casing** or they may burst. Make one continual sausage and form into a large ring around itself. You may later twist into desired lengths.
4. Go back over your product and **pop out air bubbles** with a needle of knife.

Stuffed casings.
Fen.wikipediam.org.

Filling casings.
Fen.wikipediam.org

Classroom Preparation Assignment #11

Sausage Making

Name: _____ Date: _____

1. T or F. Circle one. When making sausages, we should use the lesser and tougher cuts.
2. What does the Latin word "Salsus" mean?
3. What are the six basic components of sausage?
4. What three things does fat provide for sausage?
5. Salts and curing agents do three things for sausage; what are they?
6. What is the name of the spice we associate with Italian sausage?
7. Name the five aromatics used in sausage making.
8. What are the three Equipment Mise En Place categories noted in Topic 11?
9. After the housing is mounted on the grinder, what part goes on next?
10. What part is assembled after the worm or auger?
11. When mounting the blade, which side faces out?
12. Describe the progressive grinding technique.
13. What is produced inside fermented sausage to make the tangy flavor?
14. What do the salts and sugars do during sausage fermentation?
15. What is the white mold on fermented sausage called?

Chapter 12:
Theme Catering Event

Performing a Catered Tailgate Event

In this class you will call upon the your new skill sets and the knowledge gained in Chapter Seven and Chapter Eight to plan and execute a Tailgate Themed Event. Key concepts used in preparation for this event include:

1. **requisition,**
2. **room diagram,**
3. **load list,**
4. **game plan, and**
5. **fire schedule.**

This is a graded practical examination.

Review Topic 7 regarding Catering and Buffet presentation. Refer to course handouts and or recipes provided by your instructor via the LMS (Learning Management System) ex. Moodle®.

1. You will be tasked with developing your menu first.
2. After this, you should create a requisition for any groceries you need from the commissary. Before communicating with the commissary, fill out a load list (the entire list of equipment needed to execute the event).
3. From the load list add any items the storeroom handles to the requisition. For example, Sterno for the chaffers.
4. Next, create a game plan for the team to use in preparation and execution of the buffet.
5. A leader should keep track of firing schedule for the food and banquet set up.

The requisition

This is an excel spreadsheet provided in the LMS. It is a list of all the necessary ingredients from the storeroom to complete this practical. Some items on this list could be food, utensils, Sterno, chaffers, etc. and should be found on the load list you prepare.

1. **The load list -** All the things you need to do the event. Pretend you cannot go back to the kitchen to get it once you are there.

2. **The game plan -** This will keep you on schedule; remember you cannot be late to a catered event. If you make a mistake here, it is only points on a grade; if you do it in real life, it could cost you the profit in discounts to the customer or worse- you could be in court.

3. **The room diagram or set up plan** - Someone should be in charge of the banquet staff element of the event and be responsible for this part and its success.

4. This practical will require collaboration between your instructor and team. It will also require a significant amount of preparation.

Sausage buffet platter from CJFCI student-
Photo by Chef Marshall Welsh CEC

Classroom Preparation Assignment #12

Buffet and Catering Tailgate Event

Name: _____ Date: _____

1. Name the five key concepts used in preparation for the event.
2. What is a requisition?
3. Why is a load list important?
4. Why should you create a room diagram?
5. What is a fire schedule?

Chapter 13:
Charcuterie Board Event Planning

This day is the planning day for the Final Project Event. Today the products are ready for production next week and here you are tasked with creating the plan for a successful catered event utilizing all the skill sets from previous topics in the course just as you did with the tailgate event.

Utilize the recipes provided in the LMS to create crackers for the charcuterie boards. Utilize the cheeses and cured meats you have aged and the condiments from canning day.

A charcuterie board from a CJFCI student 2019

Remember as with any platter the **B.U.F.F.** principle.

- **Balance** - Be sure the food and garnish on the platter is balanced in size, food types, and flavor.
- **Unity** - The food should all play for the same team. Do not mix desserts with savory on the same platter.
- **Focal point** - The foods should have enough motion to the concept to bring the eye to the gross piece or "focal point".
- **Flavor** - Utilize components that complement each other and enhance each other's flavors.

A charcuterie board from a CJFCI student 2019

Topic 14:
Final Presentation Event - Off site catering for Charcuterie Project

This topic is the culmination of your semester long production of cheese, wine, and cured meats. Today you will execute your final buffet of the semester. Other items used here include crackers learned in Topic Seven and the skill sets and knowledge learned in Buffet Presentation. This is your final project grade as set forth in the syllabus.

Topic 15:
Recap and review for Final Exam

In our last class, we will review the depth of knowledge gained over the semester as you prepare for the final exam. After this, you will deep clean the kitchen in preparation for the next class of students which you will lead in the Bistro A la Carte course.

Topic 16
Final Exam

A comprehensive examination of all topics covered in the course- Questions will come from a variety of sources including the OER, lecture notes taken by you in class, power points, reading assignments available at our campus library, and any other source provided in class or on Moodle.

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GLOSSARY

a la - French for "in the manner or style of"; used in relation to a food, it designates a style of preparation or presentation.
a la carte - a menu on which each food and beverage is listed and priced separately; (2) foods cooked to order as opposed to foods cooked in advance and held for later service.
a la grecque - a preparation style in which vegetables are marinated in olive oil, lemon juice and herbs, then served cold.
a point - French term for cooking to the ideal degree of doneness; (2) when applied to meat , refers to cooking it medium rare.
acid - a substance that neutralizes a base (alkaline) in a liquid solution; foods such as citrus juice, vinegar and wine that have a sour or sharp flavor (most foods are slightly acidic); acids have a pH of less than 7.
acidulation - the browning of cut fruit caused by the reaction of an enzyme (polyphenol oxidase) with the phenolic compounds present in these fruits; this browning is often mistakenly attributed to exposure to oxygen.
additives (also adjuncts) - substances added to many foods to prevent spoilage or improve appearance, texture, flavor or nutritional value; they may be synthetic materials copied from nature (for example, sugar substitutes) or naturally occurring substances (for example , lecithin). Some food additives may cause allergic reactions in sensitive people.
adobo seasoning - a commercial spice blend; although several brands are available, most include dried chilies, Mexican oregano , cumin, black pepper, garlic powder and onion powder.
aerobic bacteria - those that thrive on oxygen.
aging - (1) the period during which freshly killed meat is allowed to rest so that the effects of rigor mortis dissipate; (2) the period during which freshly milled flour is allowed to rest so that it will whiten and produce less sticky doughs; the aging of flour can be chemically accelerated.
airline breast - a boneless chicken breast with the first wing bone attached.
alkali - also known as a base, any substance with a pH higher than 7; baking soda is one of the few alkaline roods.
allumettes - a matchstick cut of 1/8 inch X 1/8 inch X 2 inches (3 millimeters X 3 millimeters X 5 centimeters) usually used for potatoes; (2) a strip of puff pastry with a sweet or savory filling.
amino acid - the basic molecular component of proteins; each of the approximately two dozen amino acids contains oxygen, hydrogen, carbon and nitrogen atoms.
anadromous - describes a fish that migrates from a saltwater habitat to spawn in fresh water.
anaerobic bacteria - those that are able to live and grow without the presence of oxygen.
andouille - a very spicy smoked pork sausage, popular in Cajun cuisine.
angus beef, Certified - a brand created in 1978 to distinguish the highest-quality beef produced from descendants of the black, hornless Angus cattle of Scotland.
anterior - at or toward the front of an object or place; opposite of posterior.
appetizers - also known as first courses, usually small portions of hot or cold foods intended to whet the appetite in anticipation of the more substantial courses to follow.
aquafarming - also known as aquaculture, the business, science and practice of raising large quantities of fish and shellfish in tanks, ponds or ocean pens.

aroma - the sensations, as interpreted by the brain, of what we detect when a substance comes in contact with sense receptors in the nose.
aromatic - a food added to enhance the natural aromas of another food; aromatics include most flavorings, such as herbs and spices, as well as some vegetables.
aspic; aspic jelly - a clear jelly usually made from a clarified stock thickened with gelatin; used to coat foods, especially charcuterie items, and for garnish.
as purchased (A.P.) - the condition or cost of an item as it is purchased or received from the supplier
au jus - roasted meats, poultry or game served with their natural, un-thickened juices.
au sec - cooked until nearly dry.
bacteria - single-celled microorganisms, some of which can cause diseases, including food- borne diseases.
bain marie - a hot-water bath used to gently cook food or keep cooked food hot; (2) a container for holding food in a hot- water bath.
baking - a dry-heat cooking method in which foods are surrounded by hot, dry air in a closed environment; similar to roasting, the term baking is usually applied to breads, pastries, vegetables and fish.
ballotine - similar to a galantine; usually made by sniffing a deboned poultry leg with forcemeat; it is then poached or braised and normally served hot.
barbecue - to cook foods over dry heat created by the burning of hardwood or hardwood charcoals; (2) a tangy tomato- or vinegar-based sauce used for grilled foods ; (3) foods cooked by this method and/or with this sauce.
barding - tying thin slices of fat, such as bacon or pork fatback, over meats or poult1y that have little to no natural fat covering in order to protect and moisten them during roasting.
base - a substance that neutralizes an acid in a liquid solution; ingredients such as sodium bicarbonate (baking soda) that have an alkaline or bitter flavor; bases have a pH of more than 7.
baste - to moisten foods during cooking (usually grilling, broiling or roasting) with melted fat, pan drippings, a sauce or other liquids to prevent drying and to acid flavor.
batonnet - foods cut into matchstick shapes of 1/4 inch X 1/4 inch X 2 inches (6 millimeters X 6 millimeters X 5 centimeters).
beating - a mixing method in which foods are vigorously agitated to incorporate air or develop gluten; a spoon or electric mixer with its paddle attachment is used.
biological hazard - a danger to the safety of food caused by disease- causing microorganisms such as bacteria, molds, yeasts, viruses or fungi.
biscuit method - a mixing method used to make biscuits, scones and flaky doughs; it involves cutting cold fat into the flour and other dry ingredients before any liquid is added.
bisque - a soup made from shellfish; classic versions are thickened with rice.
blanching - very briefly and partially cooking a food in boiling water or hot fat; used to assist preparation (for example, to loosen peels from vegetables), as part of a combination cooking method or to remove undesirable flavors.
blending - a mixing method in which two or more ingredients are combined just until they are evenly distributed.

bloom - (1) a white, powdery layer that sometimes appears on chocolate if the cocoa butter separates; (2) a measure of gelatin's strength; (3) to soften granulated gelatin in a cold liquid before dissolving and using.

blue cheese - (1) a generic term for any cheese containing visible blue- green molds that contribute a characteristic tart, sharp flavor and aroma; also known as a blue-veined cheese or bleu; (2) a group of Roque fort-style cheeses made in the United States and Canada from cow's or goat's milk rather than ewe's milk and injected with molds that form blue-green veins; also known as blue mold cheese or blue-veined cheese.

boiling - a moist-heat cooking method that uses convection to transfer heat from a hot (approximately 212°F/ 100°C) liquid to the food submerged in it; the turbulent waters and higher temperatures cook foods more quickly than do poaching or simmering.

bouchees - small puff pastry shells that can be filled and served as bite-size hors d'oeuvre or petit fours.

bound salad - a salad composed of cooked meats, poult1y, fish, shellfish, pasta or potatoes combined with a dressing.

bouquet garni - fresh herbs and vegetables tied into a bundle with twin e and used to flavor stocks, sauces, soups and stews.

boxed beef- industry terminology for primal and sub-primal cuts of beef that are vacuum sealed and packed into cardboard boxes for shipping from the packing plant to retailers and food service operations.

braising - a combination cooking method in which foods are first browned in hot fat, then covered and slowly cooked in a small amount of liquid over low heat; braising uses a combination of simmering and steaming to transfer heat from the liquid (conduction) and the air (convection) to the foods.

brandy - an alcoholic beverage made by distilling wine or the fermented mash of grapes or other fruits.

brawn - also called an aspic terrine, made from simmered meats packed into a terrine and covered with aspic.

brazier; brasier - a pan designed for braising; usually round with two handles and a tight-fitting lid

brigade - a system of staffing a kitchen so that each worker is assigned a set of specific tasks; these tasks arc often related by cooking method, equipment or the types of foods being produced.

brine - a mixture of salt, water and seasonings used to preserve foods.

brochettes - skewers, either small hors d'oeuvre or large entree size, threaded with meat, poultry, fish, shellfish and/ or vegetables and grilled, broiled or baked; sometimes served with a clipping sauce.

broiling - a dry-heat cooking method in which foods are cooked by hear radiating from an overhead source

broth - a flavorful liquid obtained from the long simmering of meats and/or vegetables.

brown stock - a richly colored stock made of chicken, veal, beef or game bones and vegetables , all of which are caramelized before they are simmered in water with seasonings.

brunch - a late-morning to early- afternoon meal that takes the place of both breakfast and lunch; a brunch menu often offers breakfast foods as well as almost anything else.

brunoise - 1) foods cut into cubes of 1/8 inch X 1/8 inch X 1/8 inch (3 millimeters X 3 millimeters X 3 millimeters) ; a 1/16- inch (1.5-millimeter) cube is referred to as a fine brunoise; (2) foods garnished with vegetables cut in this manner

buffet service - restaurant service in which diners generally serve themselves foods arranged on a counter or tab le or are served by workers assigned to specific areas of the buffet. Usually 'buffet service style' restaurants charge by the meal; restaurants offering buffet service that charge by the dish are known as cafeterias.

bun - any of a variety of small, round yeast rolls; can be sweet or savory.

butcher - to slaughter and/or dress or fabricate animals for consumption.

butler service - restaurant service in which servers pass foods (typically hors d'oeuvre) or drinks arranged on trays.

butterfly - to slice boneless meat, poultry or fish nearly in half lengthwise so that it spreads open like a book.

calf - (1) a young cow or bull; (2) the meat of calves slaughtered when they are older than five months.

calorie - the unit of energy measured by the amount of heat required to raise 1000 grams of water one degree Celsius; it is also written as kilocalorie or kcal.

canapé - tiny open-faced sandwich served as an hors d'oeuvres ; usually composed of a small piece of bread or toast topped with a savory spread and garnish.

capon - the class of surgically castrated male chickens; they have well-flavored meat and soft, smooth skin

capsaicin - an alkaloid found in a chili pepper 's placental ribs that provides the pepper's heat.

carmelization - the process of cooking sugars; the browning of sugar enhances the flavor and appearance of foods.

Carbohydrates - a group of compounds composed of oxygen, hydrogen and carbon that supply the body with energy (4 calories per gram); carbohydrates are classified as simple (including certain sugars) and complex (including starches and fiber)

carotenoid - a naturally occurring pigment that predominates in reel and yellow vegetables such as carrots and reel peppers.

carryover cooking - the cooking that occurs after a food is removed from a heat source; it is accomplished by the residual heat remaining in the food.

cartilage - also known as gristle; a tough, elastic, whitish connective tissue that helps give structure to an animal's body.

carve - to cut cooked meat or poultry into portions casings- membranes used to hold forcemeat for sausages; they can be natural animal intestines or manufactured from collagen extracted from cattle hides.

caul fat - a fatty membrane from pig or sheep intestines; it resembles fine netting and is used to bard roasts and pates and to encase forcemeat for sausages.

cellulose- a complex carbohydrate found in the cell wall of plants ; it is edible but indigestible by humans

cephalopods--mollusks with a single, thin internal shell called a pen or cuttlebone, well-developed eyes, a number of arms that attach to the head and a saclike fin-bearing mantle ; include squid and octopus

Certified Angus Beef- a brand created in 1978 to distinguish the highest-quality beef produced from descendants of the black, hornless Angus cattle of Scotland. The meat must meet American Angus Association standards for yield, marbling and age, and be graded as high choice or prime.
chafing dish- a metal dish with a heating unit (flame or electric) used to keep foods warm at tableside or during buffet service.
charcuterie - the production of pates , terrines, galantines , sausages and similar foods.
cheesecloth - a light, fine mesh gauze used to strain liquids and make sachets.
chef de cuisine - also known simply as chef ; the person responsible for all kitchen operations , developing menu items and setting the kitchen's tone and tempo.
chef de partie - also known as station chef; produces the menu items under the direct super vision of the chef or sous-chef.
chefs knife - an all-purpose knife used for chopping, slicing and mincing ; its tapering blade is 8-14 inches (20- 35 centimeters) long.
chemical hazard - a danger to the safety of food caused by chemical substances, especially cleaning agents, pesticides and toxic metals.
chevre - French for "goat"; generally refers to a cheese made from goat's milk.
chiffonade - to finely slice or shred leafy vegetables or herbs.
china cap - a cone -shaped strainer made of perforated metal.
chine - the backbone or spine of an animal; a sub-primal cut of beef, veal, lamb, pork or game carcass containing a portion of the backbone with some adjoining flesh.
chinois - a conical strainer mad e of fine mesh, used for straining and pureeing foods.
cholesterol - a fatty substance found in foods derived from animal products and in the human body ; it has been linked to heart disease.
chop - (1) a cut of meat, including part of the rib; (2) to cut into pieces when uniformity of size and shape is not important.
chorizo - a coarse, spicy pork sausage flavored with ground chilies and removed from its casing before cooking; used in Mexican and Spanish cuisines.
chutney - a sweet-and-sour condiment made of fruits and/ or vegetables cooked in vinegar with sugar and spices; so me chutneys are reduced to a puree, while others retain recognizable pieces of their ingredients.
cider - mildly fermented apple juice; non-alcoholic apple juice may also be labeled cider.
citrus - fruits characterized by a thick rind, most of which is a bitter white pith with a thin exterior layer of colored skin (zest); their flesh is segmented and juicy and varies from bitter to tart to sweet.
clarification - (l) the process of transforming a broth into a clear consommé by trapping impurities with a clearmeat consisting of the egg white protein albumen, ground meat, an acidic product, mirepoix and other ingredients; (2) the clearmeat used to clarify a broth.
clarified butter - purified butterfat; the butter is melted and the water and milk so lids are removed.
classic cuisine - a late 19th- and early 20th-century refinement and simplification of French Grande
Cuisine. Classic (or classical) cuisine relies on the thorough exploration of culinary principles and techniques, and emphasizes the refined preparation and presentation of superb ingredients.
clean - to remove visible dirt and soil.

clear soups – un-thickened soups, including broths, consommés and broth-based soups.
clearmeat - *see* clarification.
club roll - a small oval-shaped roll made of crusty French bread.
coagulation - the irreversible transformation of proteins from a liquid or semi-liquid state to a drier, so lid state; usually accomplished through the application of heat.
cojita - an aged, hard, salty Mexican cow's-milk cheese; similar to feta, although not soaked in brine.
colander- - a perforate d bowl, with or without a base or legs, used to strain foods.
collagen - a protein found in con-nective tissue; it is converted into gelatin when cooked with moisture.
combination cooking methods - cooking methods, principally braising and stewing, that employ both dry-heat and moist-heat procedures.
composed salad - a salad prepared by arranging each of the ingredients (the base, body, garnish and dressing) on individual plates in an artistic fashion.
composition - a completed plate's structure of colors, shapes and arrangements.
compound butter - also known as a beurre compose, a mixture of softened whole butter and flavorings used as a sauce or to flavor and color other sauces.
compound sauces - *see* Small sauces.
concassee - peeled, seeded and diced tomato.
concasser - to pound or chop coarsely; usually used for tomatoes or parsley.
concentrate - also known as a fruit paste or compound; a reduced fruit puree, without a gel structure, used as a flavoring.
condiment - traditionally, any item added to a dish for flavor, including herbs, spices and vinegars; now also refers to cooked or prepared flavorings such as pre pared mustards, relishes, bottled sauces and pickles.
conduction - the transfer of heat from one item to another through direct contact.
confit - meat or poultry (often lightly salt-cured) slowly cooked and preserved in its own fat and served hot.

connective tissue - tissue found throughout an animal's body ~~that binds together and supports~~ other tissues such as muscles.
consommé - a rich stock or broth that has been clarified with clearmeat to re move impurities.
contaminants - biological, chemical or physical substances that can be harmful when consumed in sufficient quantities.
contamination - the presence, generally unintentional, of harmful organisms or substances.
convection - the transfer of heat caused by the natural movement of molecules in a fluid (whether air, water or fat) from a warmer area to a cooler one ; mechanical convection is the movement of molecules
caused by stirring.
conversion factor (C.F.) - the number used to increase or decrease ingredient quantities and recipe yields
cookery - the art, practice or work of cooking.

cookie press - also known as a cookie gun , a hollow tube fitted with a plunger and an interchangeable decorative tip or plate; soft cookie dough is pressed through the tip to create shapes or patterns.
cookies - small**,** sweet, flat pastries; usually classified by preparation or makeup techniques as drop, icebox, bar, cutout, pressed and wafer.
cooking - (1) the transfer of energy from a heat source to a food; this energy alters the food's molecular structure, changing its texture, flavor, aroma and appearance; (2) the preparation of food for consumption
cooking medium - the air, fat, water or steam in which a food is cooked.
coring - the process of removing the seeds or pit from a fruit or fruit- vegetable.
cost of goods sold – the total cost of food items sold during a given period; calculated as beginning inventory plus purchases minus ending inventory. When divided by sales equals food cost percentage.
cost per portion - the amount of the total recipe cost divided by the number of portions produced from that recipe; the cost of one serving.
coulibiac - a creamy mixture of salmon fillet, rice, hard-cooked eggs, mushrooms , shallots and dill enclosed in a pastry envelope usually made of brioche dough.
coulis - a sauce made from a puree of vegetables and/ or fruit; may be served hot or cold.
count - the number of individual items in a given measure of weight or volume.
court bouillon - water simmered with vegetables , seasonings and an acidic product such as vinegar or wine; used for simmering or poaching fish, shellfish or vegetables.
cows - female cattle after their first calving, principally raised for milk and calf production.
cracking- a milling process in which grains are broken open.
creams - also known as crèmes; include light, fluffy or creamy- textured dessert foods made with whipped cream or whipped egg whites, such as Bavarian creams, chiffons, mousses and crème Chantilly
cream sauce - a sauce made by adding cream to a béchamel sauce
cream soup - a soup made from vegetables cooked in a liquid that is thickened with a starch and pureed; cream is then incorporated to acid richness and flavor
crepe - a thin, delicate unleavened griddlecake made with a very thin egg batter cooked in a very hot sauté pan; used in sweet and savory preparations
critical control point - a step during the processing of food when a mistake can result in the transmission, growth or survival of pathogenic bacteria
croissant - a crescent-shaped roll made from a rich, rolled -in yeast dough
croquembouche - a pyramid of small puffs, each filled with pastry cream; a French tradition for Christmas and weddings, it is held together with caramelized sugar and decorated with spun sugar or marzipan flowers
croquette - a food that has been pureed or bound with a thick sauce (usually béchamel or veloute) , made into small shapes and then breaded and deep-fried
cross-contamination - the transfer of bacteria or other contaminant s from one food, work surface or piece of equipment to another
croftte, en - describes a food encased in a bread or pastry crust
crouton - a bread or pastry garnish, usually toasted or sautéed until crisp

crudités - generally refers to raw or blanched vegetables served as an hors d'oeuvre and often accompanied by a clip
crumb - the interior of bread or cake; may be elastic, aerated, fine grained or coarse grained
crustaceans - shellfish characterized by a hard outer skeleton or shell and jointed appendages; include lobsters, crabs and shrimp
cuisine - the ingredients, seasonings , cooking procedures and styles attributable to a particular group of people; the group can be defined by geography, history, ethnicity, politics, culture or religion
cuisson - the liquid used for shallow poaching
curing salt - a mixture of salt and sodium nitrite that inhibits bacterial growth; used as a preservative, often for charcuterie items
cutlet - a relatively thick, boneless slice of meat
cutting – (1) reducing a food to smaller pieces; (2) a mixing method in which solid fat is incorporated into city ingredients until only lumps of the desired size remain
cutting loss - the unavoidable and unrecoverable loss of food during fabrication; the loss is usually the result of food particles sticking to the cutting board or the evaporation of liquids
cuttlebone - also known as the pen, the single, thin internal s hell of cephalopods
cycle menu - a menu that changes every clay for a certain period and the n re peats the same daily items in the same order (for example, on a seven-clay cycle, the same menu is used every Monday)
dairy products - include cow's milk and foods produced from cow's milk such as butter, yogu1t , sour cream
and cheese; sometimes other milks and products made from them are included (e.g., goat's milk cheese)
decant - to separate liquid from solids without disturbing the sediment by pouring off the liquid; vintage wines are often decanted to remove sediment
decline phase - a period during which bacteria die at an accelerated rate, also known as the negative growth phase
decoction - (1) boiling a food until its flavor is removed; (2) a procedure used for brewing coffee
deep –frying - a dry-heat cooking method that uses convection to transfer hear to a food submerged in hot fat; foods to be deep-fried are usually first coated in batter or breading
deglaze - to swirl or stir a liquid (usually wine or stock) in a pan to dissolve cooked food particles remaining on the bottom; the resulting mixture often becomes the base for a sauce
degrease - to remove fat from the surface of a liquid such as a stock or sauce by skimming, scraping or lifting congealed fat
demi-glace - French for "half-g laze"; a mixture of half brown stock and half brown sauce reduced by half
density - the relationship between the mass and volume of a substance (D = m/ v). For example, as more
and more sugar is dissolved in a liquid, the heavier or denser the liquid will become. Sugar density is measured on the Baume scale using a hydrometer or saccharometer.
deveining - the process of removing a shrimp's digestive tract
deviled - describes meat, poult1y or other food seasoned with mustard, vinegar and other spicy seasonings

diagonals - oval-shaped slices
dice - to cut into cubes with six equal-sized sides
dip - a thick, creamy sauce, served hot or cold, to accompany crudités, crackers, chips or other foods, especially as an hors d'oeuvre; dips are often based on sour cream, mayonnaise or cream cheese
direct contamination - the contamination of raw foods in their natural setting or habitat
distillation - the separation of alcohol from a liquid (or, during the production of alcoholic beverages, from a fermented mash); it is accomplished by heating the liquid or mash to a gas that contains alcohol vapors; this steam is then condensed into the desired alcoholic liquid (beverage)
distilled water - water that has had all the minerals and impurities removed through distillation; it is generally used for pharmaceutical purposes
diver scallops - scallops that are harvested from the ocean by divers who hand-pick each one; diver scallops tend to be less gritty than those harvested by dragging, and hand-harvesting is more ecologically friendly
docking - pricking small holes in an unbaked dough or crust to allow steam to escape and to prevent the dough from rising when baked
dough - a mixture of flour and other ingredients used in baking; has a low moisture content, and gluten forms the continuous medium into which other ingredients are embedded; it is often stiff enough to cut into shapes
drawn - a market form for fish in which the viscera is removed
dress - to trim or otherwise prepare an animal carcass for consumption
dressed - a market form for fish in which the viscera, gills, fins and scales are removed
dry-heat cooking methods - cooking methods, principally broiling, grilling, roasting and baking, sautéing, pan-frying and deep-frying, that use air or fat to transfer heat through conduction and convection; dry-heat cooking methods allow surface sugars to caramelize
drying - a preservation method in which the food's moisture content is dramatically reduced; drying changes the food's texture, flavor and appearance
duckling - duck slaughtered before it is eight weeks old
edible portion (E.P.) - the amount of a food item available for consumption or use after trimming or fabrication; a smaller, more convenient portion of a larger or bulk unit
elastin - a protein found in connective tissues, particularly ligaments and tendons; it often appears as the white or silver covering on meats known as silver skin
emince - small, thin, boneless piece of meat
emulsification - the process by which generally unmixable liquids, such as oil and water, are forced into a uniform distribution
emulsion - a uniform mixture of two unmixable liquids; it is often temporary (for example, oil in water)
entrée - the main dish of an American meal, usually meat, poultry, fish or shellfish accompanied by a vegetable and starch; in France, the first course, served before the fish and meat courses
Enzymes - proteins that aid specific chemical reactions in plants and animals
escargot - French for "snail"; those used for culinary purposes are land snails (genus Helix); the most popular are the large Burgundy snails and the smaller but more flavorful common or garden snail known as petit gris

essence - a sauce made from a concentrated vegetable juice
essential nutrients - nutrient s that must he provided by food because the body cannot or does not produce them in sufficient quantities
essential oils - pure oils extracted from the skins, peels and other parts of plants used to give their aroma and taste to flavoring agents in foods, cosmetics and other products
ethnic cuisine - the cuisine of a group of people having a common cultural heritage, as opposed to the cuisine of a group of people bound together by geography or political factors
ethylene gas - a colorless, odorless hydrocarbon gas naturally emitted from fruits and fruit-vegetables that encourages ripening
evaporation - the process by which heated water molecules move faster and faster until the water turns to a gas (steam) and vaporizes; evaporation is responsible for the drying of foods during cooking
extracts--concentrated mixtures of ethyl alcohol and flavoring oils such as vanilla, almond and lemon
extrusion - the process of forcing pasta dough through perforated plates to create various shapes; pasta dough that is not extruded must be rolled and cut
fabricate - to cut a larger portion of raw meat (for example, a primal or sub primal), poult1y or fish into smaller portions
fabricated cuts - individual portions cut from a sub-primal
facultative bacteria - those that can adapt and will survive with or without oxygen
fancy - (1) fish that has been previously frozen; (2) a quality grade for fruits, especially canned or frozen
fatback - fresh pork fat from the back of the pig, used primarily for barding
fats - (1) a group of compounds composed of oxygen, hydrogen and carbon atoms that supply the body with energy (9 calories per gram); fats are classified as saturated, monounsaturated or polyunsaturated; (2) the general term for butter, lard, sho1tening, oil and margarine use d as cooking media or ingredients
fermentation - the process by which yeast converts sugar into alcohol and carbon dioxide; it also refers to the time **feuilletees -** square, rectangular or diamond-shaped puff pastry boxes; may be filled with a sweet or savory mixture
FIFO (first in, **first out) - a** system of rotating inventory, particularly perishable and semi-perishable goods, in which items are used in the order in which they are received
file' - a seasoning and thickening agent made from dried, ground sassafras leaves
filet, fillet - (1) filet: a boneless tenderloin of meat; (2) fillet: the side of a fish removed intact, boneless or semiboneless, with or without skin; (3) to cut such a piece
fish veloute - a veloute sauce made from fish stock
flash-frozen - describes food that has been frozen very rapidly using metal plates, extremely low temperan1res or chemical solutions
flash point - the temperature at which a fat ignites and small flames appear on the surface of the fat
flatfish - fish with asymmetrical, compressed bodies that swim in a horizontal position and have both
eyes on the top of the head; include sole, flounder and halibut

flavor- an identifiable or distinctive quality of a food, drink or other substance perceived with the combined senses of taste, touch and smell

flavoring - an item that acids a new taste to a food and alters its natural flavors; flavorings include herbs, spices, vinegars and condiments; the terms *seasoning* and *.flavoring* arc often used interchangeably.

fleuron - a crescent- shaped piece of puff pastry used as a garnish

flour - a powdery substance of varying degrees of fine ness made by milling grains such as wheat, corn or rye

fluoridated water - water, either naturally fluoridated or treated with a fluorine-containing compound, intended to promote healthy teeth by preventing tooth decay

foamed milk - milk that is heated and frothed with air and steam generated by an espresso machine; it will be slightly cooler than steamed milk

foie gras - liver of specially fattened geese

fond - (1) French for "stock" or "base"; (2) the concentrated juices , drippings and bits of food left in pans after foods are roasted or sautéed; it is used to flavor sauces made directly in the pans in which foods were cooked

fond lie - *see* jus lie

fondue - a Swiss specialty made with melted cheese, wine and flavorings; eaten by dipping pieces of bread into the hot mixture with long forks

food cost - the cost of the materials that go directly into the production of menu items

food cost percentage - the ratio of the cost of foods used to the total food sales during a set period, calculated by dividing the cost of food used by the total sales in a restaurant

Forcemeat - a preparation made from uncooked ground meats, poultry, fish or shellfish, seasoned, and emulsified with fat; commonly prepared as country-style, basic and mousseline and used for charcuterie items

formula - the standard term used throughout the industry for a bakeshop recipe; formulas rely on weighing to ensure accurate measuring of ingredients

free-range chickens - chickens allowed to move freely and forage for food; as opposed to chickens raised in coops

free-range veal - the meat of calves that are allowed to roam freely and eat grasses and other natural foods; this meat is pinker and more strongly flavored than that of milk-fed calves

freezer burn - the surface dehydration and discoloration of food that results from moisture loss at below-freezing temperatures

Frenching - a method of trimming racks or individual chops of meat, especially lamb, in which the excess fat is cut away , leaving the eye muscle intact; all meat and connective tissue are removed from the rib bone

fresh-frozen - describes a food that has been frozen while still fresh

fricassee - a white stew in which the meat is cooked in fat without browning before the liquid is added

frying - a dry-heat cooking method in which foods are cooked in hot fat; includes sautéing and stir-frying, pan -frying and deep,-frying

fumet - a stock made from fish bones or shellfish shells and vegetables simmered in a liquid with flavorings

fungi - a large group of plants ranging from single-celled organisms to giant mushrooms; the most common are molds and yeasts
fusion cuisine - the blending or use of ingredients and/or preparation methods from various ethnic, regional or national cuisines in the same dish; also known as transnational cuisine
galantine - similar to a ballotine; a charcuterie item made from a forcemeat of poultry , game or suckling pig usually wrapped in the skin of the bird or animal and poached in an appropriate stock; often served cold , usually in aspic game-birds and animals hunted for sport or food; many game birds and animals are now ranch-raised and commercially available
game hen - the class of young or immature progeny of Cornish chickens or of a Cornish chicken and White Rock chicken; they are small and ve1y flavorful
garde-manger - (1) also known as the pantry chef, the cook in charge of cold food production, including salads and salad dressings, charcuterie items, cold appetizers and buffet items; (2) the work area where these foods arc prepared
garnish - (1) food used as an attractive decoration; (2) a subsidiary food used to acid flavor or character to the main ingredient in a dish (for example, noodles in chicken noodle soup)
gastrique - caramelized sugar deglazed with vinegar; used to flavor tomato or savory fruit sauces
gastronomy - the art and science of eating well
gaufrette - a thin lattice or waffle -textured slice of vegetable cut on a mandolin
gaufrette potatoes - thin, fried, lattice-cut slices of potato
gelatin - a tasteless and odorless mixture of proteins (especially collagen) extracted from boiling bones , connective tissue and other animal parts; when dissolved in a hot liquid and then cooled, it forms a jellylike substance used as a thickener and stabilizer
gelatinization - the process by which starch granules are cooked; they absorb moisture when placed in a liquid and heated; as the moisture is absorbed, the product swells, softens and clarifies slightly.
ghee - a form of clarified butter in which the milk solids remain with the fat and are allowed to brown ; originating in India and now used worldwide as an ingredient and cooking medium, it has a long shelf life, a high smoke point and a nutty, caramel-like flavor
giblets - the collective term for edible poultry viscera, including gizzards, hearts , livers and necks.
Gizzard - a bird's second stomach
glacage - browning or glazing a food, usually under a salamander or broiler
glace de poisson - a syrupy glaze made by reducing a fish stock
glace de viande - a dark, syrupy meat glaze made by reducing a brown stock
glace de volaille - a light brown, syrupy glaze made by reducing a chicken stock
glaze – (1) any shiny coating applied to food or created by browning; (2) the dramatic reduction and concentration of a stock; (3) a thin, flavored coating poured or dripped onto a cake or pastry
global cuisine - foods (often commercially produced items) or preparation methods that have become ubiquitous throughout the world; for example, curries and French-fried potatoes
gougere eclair- pastry favored with cheese baked and served as a savory hors d'oeuvre
gourmand -- a connoisseur of fine food and drink, often to excess
gourmet - a connoisseur of fine food and drink
gourmet foods - foods of the highest quality, perfectly prepared and beautifully presented

grading - a series of voluntary programs offered by the U.S. Department of Agriculture to designate a food 's overall quality

grains – (1) grasses that bear edible seeds, including corn, rice and wheat; (2) the fruit (that is, the seed or kernel) of such grasses

gram - the basic unit of weight in the metric system; equal to approximately 1/)o of an ounce

grande cuisine - the rich, intricate and elaborate cuisine of the 18th- and 19th-century French aristocracy and upper classes. It is based on the rational identification, development and adoption of strict culinary principles. By emphasizing the how and why of cooking, *grande cuisine* was the first to distinguish itself from regional cuisines, which tend to emphasize the tradition of cooking.

grate - to cut a food into small, thin shreds by rubbing it against a serrated metal plate known as a grater

gravy - a sauce made from meat or liquid and thickening agent; usually made in the pan in which the meat or poult1y was cooked

green meats - freshly slaughtered meats that have not had sufficient time to age and develop tenderness and flavor

gremolata - an aromatic garnish of chopped parsley, garlic and lemon zest used for osso buco

grilling - a city-heat cooking method in which foods are cooked by heat radiating from a source located below the cooking surface; the heat can be generated by electricity or by burning gas, hardwood or hardwood charcoals

grind - to pulverize or reduce food to small particles using a mechanical grinder or food processor

grinding - a milling process in which grains are reduced to a powder; the powder can be of differing degrees of fineness or coarseness

gristle - *see* cartilage

grosse piece - a centerpiece consisting of a large piece of the principal food offered; for example, a large wheel of cheese with slices of the cheese cascading around it

HACCP - *see* Hazard Analysis Critical Control Points

hanging - the practice of allowing eviscerated (drawn or gutted) game to age in a city , well-ventilated place; hanging helps tenderize the flesh and strengthen its flavor

hard water - water with relatively high calcium and magnesium concentrations

Hazard Analysis Critical Control Points (HACCP) - a rigorous system of self-inspection used to manage and maintain sanitary conditions in all types of food service operations; it focuses on the flow of food through the food service facility to identify any point or step in preparation (known as a critical control point) where some action must be taken to prevent or minimize a risk or hazard

Heimlich maneuver - the first-aid procedure for choking victims in which sudden upward pressure is applied to the upper abdomen in order to force any foreign object from the windpipe

herb - any of a large group of aromatic plants whose leaves, stems or flowers are used as a flavoring; used either dried or fresh

hollandaise - an emulsified sauce made of butter, egg yolks and flavorings (especially lemon juice)

homogenization - the process by which milk fat is prevented from separating out of milk products

hors d'oeuvre - very small portions of hot or cold foods se1ved before the meal to stimulate the appetite
hotel pan- a rectangular, stainless steel pan with a lip allowing it to rest in a storage shelf or steam table; available in several standard sizes
hull - also known as the husk, the outer covering of a fruit, seed or grain
hulling - a milling process in which the hull or husk is removed from grains
hybrid - the result of cross-breeding different species that are genetically unalike; often a unique product
hybrid menu - a menu combining features of a static menu with a cycle menu or a market menu of specials
hydrogenation - the process used to harden oils; hydrogen atoms are added to unsaturated fat molecules, making them partially or completely saturated and thus solid at room temperature
hydrometer- a device used to measure specific gravity; it shows degrees of concentration on the Baume scale
hygroscopic - describes a food that readily absorbs moisture from the air
IMPS/NAMP - see NAMP/TMPS
incidental food additives- those inadvertently or unintentionally added to foods during processing, such as pesticide residues on fruits
induction cooking - a cooking method that uses a special coil placed below the stove top's surface in combination with specially designed cookware to generate heat rapidly with an alternating magnetic field
infection - in the food safety context, a disease caused by the ingestion of live pathogenic bacteria that continue their life processes in the consumer's intestinal tract
infrared cooking - a heating method that uses an electric or ceramic element heated to such a high temperature that it gives off waves of radiant heat that cook the food
infuse - to flavor a liquid by steeping it with ingredients such as tea, coffee, herbs or spices
infusion - (1) the extraction of flavors from a food at a temperature below boiling; (2) a group of coffee brewing techniques, including steeping, filtering and dripping; (3) the liquid resulting from this process
instant-read thermometer - a thermometer used to measure the internal temperature of foods; the stem is inserted in the food , producing an instant temperature readout
intentional food additives - those added to foods on purpose, such as the chemicals used to ensure longer shelf life or food colorings
intoxication - in the food safety context, a disease caused by the toxins that bacteria produce during their life processes
inventory - the listing and counting of all foods in the kitchen, storerooms and refrigerators
IQF (individually quick-frozen) - describes the technique of rapidly freezing each individual item of
food such as slices of fruit, berries or pieces of fish before packaging; IQF foods are not packaged with syrup or sauce
irradiation - a preservation method used for certain fruits , vegetables, grains, spices, meat and poultry in which ionizing radiation sterilizes the food, slows ripening and prevents sprouting
jam - a fruit gel made from fruit pulp and sugar
jelly - a fruit gel made from fruit juice and sugar

juice - the liquid extracted from any fruit or vegetable

julienne - (1) to cut foods into stick-shaped pieces, approximately 1/ 8 inch X 1/8 inch X 2 inches (3 millimeters X 3 millimeters X 5 centimeters); a fine julienne has dimensions of 1/16 in c h X 1/16 inch X 2 inches (1.5millimeters X 1.5 millimeters X 5 centimeters); (2) the stick-shaped pieces of cut food

jus lie - also known as fond lie; a sauce made by thickening brown stock with cornstarch or similar starch; often used like a demi- glace, especially to produce small sauces

Kobe beef - an exclusive type of beef traditionally produced in Kobe, Japan. Wagyu cattle are fed a special diet, which includes beer to stimulate the animal's appetite during summer months. The animals are massaged with sake to relieve stress and muscle stiffness in the belief that calm, contented cattle produce better-quality meat. This special treatment produces meat that is extraordinarily tender and full-flavored, and extraordinarily expensive. Kobe Beef America introduced Wagyu cattle to the United States in 1976. KBA's cattle are raised without hormones and the meat is dry-aged for 21 clays prior to sale.

Kosher - prepared in accordance with Jewish dietary laws

lag phase - a period , usually following transfer from one place to another, during which bacteria do not experience much growth

lamb - the meat of sheep slaughtered under the age of one year

lard - the rendered fat of hogs

larding - inserting thin slices of fat, such as pork fatback , into low-fat meats in order to add moisture

lardons - sliced, blanched, fried bacon

leading sauces - also known as mother sauces, the foundation for the entire classic repertoire of hot sauces; tl1e five leading sauces (béchamel, veloute, espagnole [also known as brown), tomato and hollandaise) arc distinguished by the liquids and thickeners used to make them; they can be seasoned and garnished to create a wide variety of small or compound sauces

lecithin- a natural emulsifier found in egg yolks

legumes - (1) French for "vegetables"; (2) a large group of vegetables with double-seamed seed pods; depending upon the variety, the seeds, pod and seeds together, or the dried seeds are eaten

liaison - a mixture of egg yolks and heavy cream used to thicken and enrich sauces

liqueur - a strong, sweet, syrupy alcoholic beverage made by mixing or redistilling neutral spirits with fruits, flowers, herbs, spices or other flavorings; also known as a cordial

liquor - an alcoholic beverage made by distilling grains, fruits, vegetables or other foods; includes rum , whiskey and vodka

liter - the basic unit of volume in the metric system, equal to slightly more than a quart

log phase - a period of accelerated growth for bacteria

macerate - to soak foods in a liquid, usually alcoholic, to soften them

macronutrients - the nutrients needed in large quantities: carbohydrates, proteins, fats and water

madeira - a Portuguese fortified wine heated during aging to give it a distinctive flavor and brown color

Magret - a duck breast, traditionally taken from the ducks that produce foie gras; it is usually served boneless but with the skin intact

maître d'hôtel - (1) the leader of the dining room brigade, also known as the dining room manager; oversees the dining room or "front of the house" staff; (2) a compound butter flavored with chopped parsley and lemon juice
mandolin - a stainless steel, hand- operated slicing device with adjustable blades
marbling - whitish streaks of inter- and intramuscular fat
marinade - the liquid used to marinate foods; it generally contains herbs, spices and other flavoring ingredients as well as an acidic product such as wine, vinegar or lemon juice
marinate - to soak a food in a seasoned liquid in order to tenderize the food and add flavor to it
market menu - a menu based upon product availability during a specific period ; it is written to use foods when they are in peak season or readily available
marmalade - a citrus jelly that also contains unpeeled slices of citrus fruit
marquise - a frozen mousse-like dessert, usually chocolate
marsala - a flavorful fortified sweet-to-semi dry Sicilian wine
marzipan - a paste of ground almonds, sugar and egg whites used to fill and decorate pastries
matignon - a standard mirepoix plus diced smoked bacon or smoked ham and, depending on the dish, mushrooms and herbs
mayonnaise - a thick , creamy sauce consisting of oil and vinegar emulsified with egg yolks, usually used as a salad dressing
meal - (1) the coarsely ground seeds of any edible grain such as corn or oats; (2) any dried, ground substance (such as bone meal)
mealy potatoes - also known as starchy potatoes; those with a high starch content and thick skin; they are best for baking
medallion - a small, round, relatively thick slice of meat
melting - the process by which certain foods, especially those high in fat, gradually soften and then liquefy when heated
menu - a list of foods and beverages available for purchase
meringue - a foam made of beaten egg whites and sugar
metabolism - all the chemical reactions and physical processes that occur continuously in living cells and organisms
meter- the basic unit of length in the metric system, equal to slightly more than 1 yard
micronutrients - the nutrients needed only in small amounts; vitamins and minerals
microorganisms - single-celled organisms as well as tiny plants and animals that can be seen only through a microscope
microwave cooking - a heating method that uses radiation generated by a special oven to penetrate the food; it agitates water molecules , creating friction and heat; this energy tl1en spreads throughout the food by conduction (and by convection in liquids)
mignonette - (1) a medallion; (2) a vinegar sauce with shallots
milk-fed veal - also known as formula-fed veal; the meat of calves feel only a nutrient-rich liquid and kept tethered in pens; this meat is white r and more mildly flavored than that of free-range calves
mince- to cut into ve1y small pieces when uniformity of shape is not important
minerals - inorganic micronutrients necessa1y for regulating body functions and proper bone and tootl1 structures

mineral water - drinking water that comes from a protected underground water source and contains at least 250 parts per million of total dissolved solids such as calcium

mirepoix - a mixture of coarsely chopped onions, carrots and celery used to flavor stocks , stews and other foods; generally, a mixture of 50 percent onions, 25 percent carrots and 25 percent celery, by weight, is used

mise en place - French for "putting in place"; refers to the preparation and assembly of all necessary ingredients and equipment

miso - a thick paste made by salting and fermenting soybeans and rice or barley; generally used as a flavoring

mix - to combine ingredients in such a way that they are evenly dispersed throughout the mixture

moist-heat cooking methods - cooking methods, principally simmering, poaching, boiling and steaming, that use water or steam to transfer heat through convection; moist-heat cooking methods are used to emphasize the natural flavors of foods

mojo criollo - a citrus and herb marinade used in Latino cuisines; bottled brands are available in Hispanic markets

molding - the process of shaping foods, particularly grains and vegetables bound by sauces, into attractive, hard -edged shapes by using metal rings, circular cutters or other forms

molds - (1) algae-like fungi that form long filaments or strands; for the most part, molds affect only food appearance and flavor; (2) containers used for shaping foods

mollusks - shellfish characterized by a soft, unsegmented body, no internal skeleton and a hard outer shell

monounsaturated fats - *see* unsaturated fats

montei - au beurre - to finish a sauce by swirling or whisking in butter (raw or compound) until it is melted; used to give sauces shine, flavor and richness

mortadella - an Italian smoked sausage made with ground beef, pork and pork fat, flavored with coriander and white wine; it is air-dried and has a delicate flavor; also a large American bologna-type pork sausage sn1dded with pork fat and garlic

mortar and pestle - a hard bowl (the mo1tar) in which foods such as spices are g round or pounded into a pow de r with a club-shaped tool (the pestle)

mother sauces - *see* leading sauces

mousse - a soft, creamy food, either sweet or savory, lightened by adding whipped cream, beaten egg whites or both

mousseline - a cream or sauce lightened by folding in ,whipped cream

mouthfeel - the sensation created in the mouth by a combination of a food 's taste, smell, texture and temperature

muesli - a breakfast cereal made from raw or toasted cereal grains, dried fruits, nuts and dried milk solids and usually eaten with milk or yogurt; sometimes known as granola

muffin method - a mixing method used to make quick-bread batters; it involves combining liquid fat with other liquid ingredients before adding them to the dry ingredients

muscles-- animal tissues consisting of bundles of cells or fibers that can contract and expand; they are the portions of a carcass usually consumed

mushrooms - members of a broad catego1y of plants known as fungi; they are often used and served like vegetables

mutton - the meat of sheep slaughtered after they reach the age of one year
NAMP/IMPS - the Institutional Meat Purchasing Specifications (IMPS) published by the U.S. Department of
Agriculture; the IMPS are illustrated and described in The Meat Buyer's Guide published by the National Association of Meat Purveyors (NAMP)
nappe - (1) the consistency of a liquid, usually a sauce , that will coat the back of a spoon; (2) to coat a food with sauce. Truly nappe is French for "to brush". A la Nappe is to coat the back of a spoon.
national cuisine - the characteristic cuisine of a nation
natural water - bottled drinking water not derived from a municipal water supply; it can be mineral, spring, well or artesian-well water
navarin - a brown ragout generally made with turnips , other root vegetables, onions , peas and lamb
nectar- the diluted, sweetened juice of peaches, apricots, guavas , black currants or other fruits, the juice of ·which would be too thick or too tart to drink straight
neutral spirits or grain spirits - pure alcohol (ethanol or ethyl alcohol); they are odorless , tasteless and a ve1y potent 190 proof (95% alcohol)
New American cuisine - late- 20th-century movement that began in California but has spread across the United States; it stresses the use of fresh, locally grown, seasonal produce and high - quality ingredients simply pre pa red in a fashion that preserves and emphasizes natural flavors
noisette - a small, usually round, portion of meat cut from the rib
noodles - flat strips of pasta-type dough made with eggs; may be fresh or dried
nouvelle cuisine - French for "new cooking"; a mid-20th-century movement away from many classic cuisine principles and toward a lighter cuisine based on natural flavors, shortened cooking times and innovative combinations
nut – (1**)** the edible single-seed kernel of a fruit surrounded by a hard shell; (2) generally , any seed or fruit with an edible kernel in a hard shell
nutrients - the chemical substances found in food that nourish the body by promoting growth, facilitating body functions and providing energy; there are six categories of nutrients: proteins, carbo hydrates, fats, water, minerals and vitamins
nutrition - the science that studies nutrients
oblique cuts - small pieces with two angle-cut sides
offal - also called variety meats; edible entrails (for example, the heart, kidneys, liver,
sweetbreads and tongue) and extremities (for example, oxtail and pig's feet) of an animal
oignon brule- French for "burnt onion"; made by charring onion halves; used to flavor and color stocks and sauces
oignon pique - French for "pricked onion"; a bay leaf tacked with a clove to a peeled onion; used to flavor sauces and soups
oil - a type of fat that remains liquid at room temperature
organic farming - a method of farming that does not rely on synthetic pesticides, fungicides , herbicides or fertilizers
overhead costs - expenses related to operating a business, including but not limited to costs for advertising, equipment leasing , insurance , property rent, supplies and utilities
over run - the amount of air churned into an ice cream during freezing

paillard - a scallop of meat pounded until thin, usually grilled
palate - (1) the complex of smell, taste and touch receptors that contribute to a person's ability to recognize and appreciate flavors; (2) the range of an individual's recognition and appreciation of flavors
panada; panade - (1) something other than fat added to a forcemeat to enhance smoothness, aid emulsification or both; it is often béchamel, rice or crust less white bread soaked in milk; (2) a mixture for binding stuffing and dumplings, notably quenelles, often choux pastry, bread crumbs, frangipane, pureed potatoes or rice
pan-broiling - a dry- heat cooking method that uses conduction to transfer heat to a food resting directly on a cooking surface; no fat is used and the food remains uncovered
pan-dressed - a market form for fish in which the viscera, gills and scales are removed and the fins and tail are trimmed
pan-frying - a dry-heat cooking method in which food is placed in a moderate amount of hot fat
pan gravy - a sauce made by deglazing pan drippings from roast meat or poult1y and combining them with a roux or other starch and stock
papain - an enzyme found in papayas that breaks clown proteins ; used as the primary ingredient in many commercial meat tenderizers
papillote, en - a cooking method in which food is wrapped in paper or foil and the n heated so that the food steams in its own moisture
parboiling - partially cooking a food in boiling or simmering liquid ; similar to blanching but the cooking time is longer
parchment paper - heat-resistant paper used throughout the kitchen for tasks such as lining baking pans, wrapping foods to be cooked en papillote and covering foods during shallow poaching
par cooking - partially cooking a food by any cooking method
paring knife - a short knife used for detail work, especially cutting fruits and vegetables; it has a rigid blade approximately 2-4 inches (5- 10 centimeters) long
Parsienne - spheres of fruits or vegetables cut with a small melon ball cutter
par stock (par level) - the amount of stock necessary to cover operating needs between deliveries
pasteurization - the process of beating something to a certain temperature for a specific period in order to destroy pathogenic bacteria
pate - traditionally, a fine savory meat filling wrapped in pastry, baked and served hot or cold; as opposed to a terrine, which was a coarsely ground and highly seasoned meat mixture baked in an earthenware mold and served cold; today, the words pate and terrine are generally used interchangeably
pate au pate - a specially formulated pastry dough used for wrapping pate when making pate en croute
pate brisee - a dough that produces a very flaky baked product containing little or no sugar; flaky dough is used for prebaked pie shells or crusts; mealy dough is a less flaky product used for custard , cream or fruit pie crusts
pate en croute - a pate baked in pastry dough such as pate au pate
pathogen - any organism that causes disease; usually refers to bacteria; undetectable by smell, sight or taste

paupiette - a thin slice of meat or fish that is rolled around a filling of finely ground meat or vegetables, then fried, baked or braised in wine or stock
paysanne - foods cut into flat square, round or triangular items with dimensions of *1/2* inch X ½ inch X *Ys* inch (1.2 centimeters X 1.2 centimeters X 3 millimeters)
pectin - a gelatin-like carbohydrate obtained from certain fruits; used to thicken jams and jellies
pepperoni - a hard, thin, air-dried Italian sausage seasoned with red and black pepper
persillade - (1) a food served with or containing parsley; (2) a mixture of bread crumbs, parsley and garlic used to coat meats, especially lamb
pH - a measurement of the acid or alkali content of a solution, expressed on a scale of Oto 14.0. A pH of 7.0 is considered neutral or balanced. The lower the pH value, the more acidic the substance. The higher the pH value, the more alkaline the substance.
physical hazard - a danger to the safety of food caused by particles such as glass chips, metal shavings, bits of wood or other foreign matter
pickle - (1) to preserve food in a brine or vinegar solution; (2) food that has been preserved in a seasoned brine or vinegar, especially cucumbers. Pickled cucumbers are available whole, sliced, in wedges, or chopped as a relish, and may be sweet, sour, dill- flavored or hot and spicy.
pigment - any substance that gives color to an item
poaching - a moist-heat cooking method that uses convection to transfer heat from a hot (approximately 160°F-180°F [71°C-8 2°C]) liquid to the food sub merged in it
pomes - members of the Rosaceae family; tree fruits with a thin skin and firm flesh surrounding a central core containing many small seeds (called pips or carpels); include apples, pears and quince
ponzu – a Japanese dipping sauce traditionally made with lemon juice or rice wine vinegar, soy sauce, mirin or sake, seaweed and dried bonito flakes
pork - the meat of hogs, usually slaughtered under the age of one year
posole - also known as hominy or samp; dried corn that has been soaked in hydrated lime or lye; posole (Sp. pozole) also refers to a stew-like soup made with pork and hominy served in Mexico and
Central America
Posterior - at or toward the rear of an object or place; opposite of anterior
potentially hazardous foods - foods on which bacteria can thrive
poultry - the collective term for domesticated birds bred for earing; they include chickens, ducks, geese, guineas, pigeons and turkeys
preserve - a fruit gel that contains large pieces or whole fruits
primal cuts - the primary divisions of muscle, bone and connective tissue produced by the initial butchering of the carcass
prix fixe - French for "fixed price"; refers to a menu offering a complete meal for a set price; also known as table d'hôtel
professional cooking - a system of cooking based on a knowledge of and appreciation for ingredients and procedures
proteins - a group of compounds composed of oxygen, hydrogen, carbon and nitrogen atoms necessary for manufacturing, maintaining and repairing body tissues and as an alternative source of energy (4 calories per gram); protein chains are constructed of various combinations of amino acids

pulses - dried seeds from a variety of legumes
pumpernickel - (1) coarsely ground rye flour; (2) bread made with this flour
puree - (1) to process food to achieve a smooth pulp; (2) food that is processed by mashing, straining or fine chopping to achieve a smooth pulp
purified water - bottled water produced by distillation, reverse osmosis, deionization or suitable processes that meet governmental standards
quality grades - a guide to the eating qualities of meat-its tenderness, juiciness and flavor- based on an animal's age and the meat's color, texture and degree of marbling
quenelle - a small, dumpling-shaped portion of a mousseline forcemeat poached in an appropriately flavored stock; it is shaped by using two spoons
radiation cooking - a heating process that does not require physical contact between the heat source and the food being cooked; instead energy is transferred by waves of heat or light striking the food. Two kinds of radiant heat used in the kitchen are infrared and microwave.
raft - a crust formed during the process of clarifying consommé; it is composed of the clearmeat and impurities from the stock, which rise to the top of the simmering stock and release additional flavors
ragout - (1) traditionally, a well-seasoned, rich stew containing meat, vegetables and wine; (2) any stewed mixture
ramekin - a small, ovenproof dish, usually ceramic
rancidity - the decomposition of fats by exposure to oxygen, resulting in oft flavors and destruction of nutritive components
ratites - family of flightless birds with small wings and flat breastbones; they include the ostrich, emu and rhea
recipe - a set of written instructions for producing a specific food or beverage; also known as a formula
recovery time - the length of time it takes a cooking medium such as fat or water to return to the desired cooking temperature after food is submerged in it
red fish - a name applied to various species of fish around the world. In the United States, it generally refers to a member of the drum family found in the southern Atlantic and the Gulf of Mexico. It has a reddish-bronze skin and firm, ivory flesh with a mild flavor and a typical market weight of 2 to 8 pounds (0.9 to 3.6 kilograms); it is also known as channel bass, red drum and reel bass.
red rice - an un-milled short- or long-grain rice from the Himalayas; it has a russet-colored bran and an earthy, nutty flavor
reduction - cooking a liquid such as a sauce until its quantity decreases through evaporation. To reduce by one-half means that one-half of the original amount remains. To reduce by three-fourths means that only one-fourth of the original amount remains. To reduce au sec means that the liquid is cooked until nearly dry.
refreshing - submerging a food in cold water to quickly cool it and prevent further cooking, also known as shocking; usually used for vegetables
regional cuisine - a set of recipes based on local ingredients, traditions and practices; within a larger geographical, political, cultural or social unit, regional cuisines arc often variations of one another that blend together to create a national cuisine

relish - a cooked or pickled sauce usually made with vegetables or fruits and often used as a condiment; can be smooth or chunky, sweet or savory and hot or mild

remouillage - French for "rewetting"; a stock produced by reusing the bones left from making another stock. After draining the original stock from the stockpot, acid fresh mirepoix, a new sac het and enough water to cover the bones and mirepoix, and a second stock can be made. A remouillage is treated like the original stock; allow it to simmer for four to five hours before straining. A remouillage will not be as clear or as flavorful as the original stock, however. It is often used to make glazes or in place of water when making stocks.

Render - (1) to melt and clarify fat; (2) to cook meat in order to remove the fat

restaurateur - a person who owns or operates an establishment serving food, such as a restaurant

ricer - a sieve-like utensil with small holes through which soft food is forced; it produces particles about the size of a grain of rice

rillettes - meat or poultry slowly cooked, mashed and preserved in its own fat; served cold and usually spread on toast

risers - boxes (including the plastic crates used to store glassware) covered with linens, paper or other decorative items and used on a buffet table as a base for platters, trays or displays

roasting - a dry-heat cooking method that heats food by surrounding it with hot, dry air in a closed enviro1m1ent or on a spit over an open fire; similar to baking, the term roasting is usually applied to meats, poultry, game and vegetables

roe - fish eggs

roll cuts – *see* oblique cuts

rondeau - a shallow , wide, straight-sided pot with two loop handles

rondelles - disk-shaped slices

rotate stock – to use products in the order in which they were receive d; all perishable and semi-perishable goods, whether fresh, frozen, canned or dry, should be used according to the first in, first out (FIFO) principle

rotisserie - cooking equipment that slowly rotates meat or other foods in front of a hearing element

roulade - (1) a slice of meat, poultry or fish rolled around a stuffing; (2) a filled and rolled sponge cake

round fish - fish with round, oval or compressed bodies that swim in a vertical position and have eyes on both sides of their heads; include salmon , swordfish and cod

rounding - the process of shaping dough into smooth, round balls; used to stretch the outside layer of gluten into a smooth coating

roux - a cooked mixture of equal parts flour and fat, by weight, used as a thickener for sauces and other dishes; cooking the flour in fat coats the starch granules with the fat and prevents them from lumping together or forming lumps when introduced into a liquid

rub - a mixture of fresh or dried herbs and spices ground together; it ca n be used dried, or it can be mixed with a little oil, lemon juice, prepared mustard or ground fresh garlic or ginger to make a wet rub

sachet d'epices; sachet - French for "bag of spices"; aromatic ingredients tied in a cheesecloth bag and used to flavor stocks and other foods; a standard sachet contains parsley stems, cracked peppercorns, dried thyme, bay leaf, cloves and, optionally, garlic

salad - a single food or a mix of different foods accompanied or bound by a dressing
salad dressing - a sauce for a salad; most are based on a vinaigrette, mayonnaise or other emulsified product
salad greens - a variety of leafy vegetables that are usually eaten raw
salamander - a small broiler used primarily for browning or glazing the tops of foods
Salsa - Spanish for "sauce"; (1) generally, a cold chunky mixture of fresh herbs, spices, fruits and/or vegetables used as a sauce for meat, poultry, fish or shellfish; (2) in Italian usage, a general term for pasta sauces
salt-curing - the process of surrounding a food with salt or a mixture of salt, sugar, nitrite-based curing salt, herbs and spices; salt- curing dehydrates the food, inhibits bacterial growth and adds flavor
sanitation – the creation and maintenance of conditions that will prevent food contamination or food- borne illness
sanitize - to reduce pathogenic organisms to safe levels
sansho - dried berries of the prickly ash tree, ground into a powder that is also known as Szechuan pepper, fagara and Chinese pepper; generally used in Japanese cooking to season fatty foods
sashimi - raw fish eaten without rice; usually served as the first course of a Japanese meal
saturated fats - fats found mainly in animal products and tropical oils; usually solid at room temperature; the body has more difficulty breaking down saturated fats than either monounsaturated or polyunsaturated fats
sauce - generally, a thickened liquid used to flavor and enhance other foods
sausage - a seasoned forcemeat usually stuffed into a casing; a sausage can be fresh, smoked and cooked, dried or hard
sautéing - a dry-heat cooking method that uses conduction to transfer heat from a hot pan to food with the aid of a small amount of hot fat; cooking is usually done quickly over high temperatures
sauteuse - the basic sauté pan with sloping sides and a single long handle
sautoir - a sauté pan with straight sides and a single long handle
savory - a food that is not sweet
scald - to heat a liquid, usually milk, to just below the boiling point
scallop - a thin, boneless slice of meat
score - to cut shallow gashes across the surface of a food before cooking
Scoville Heat Units--a subjective rating for measuring a chile's heat; the sweet bell pepper usually rates 0 units, the tabasco pepper rates from 30,000 to 50,000 units and the habanero pepper rates from 100,000 to 300,000 units
seafood - an inconsistently used term encompassing some or all of the following: saltwater fish, freshwater fish, saltwater shellfish, freshwater shellfish and other edible marine life
sear - to brown food quickly over high heat; usually done as a preparatory step for combination cooking methods
season - traditionally, to enhance flavor by adding salt; (2) more commonly, to enhance flavor by adding salt and/or pepper as well as herbs and spices; (3) to mature and bring a food (usually beef or game) to a proper condition by aging or special preparation; (4) to prepare a pot, pan or other cooking surface to prevent sticking

seasoning - an item added to enhance the natural flavors of a food without dramatically changing its taste; salt is the most common seasoning
seltzer water - a flavorless natural mineral water with carbonation, originally from the German town of Niederselters
semi a la carte-describes a menu on which some foods (usually appetizers and desserts) and beverages arc priced and ordered separately, while the entree is accompanied by and priced to include other dishes such as a salad, starch or vegetable
shallow poaching - a moist-heat cooking method that combines poaching and steaming; the food (usually fish) is placed on a vegetable bed and partially covered with a liquid (cuisson) and simmered
shellfish - aquatic invertebrates with shells or carapaces
shocking - also called refreshing; the technique of quickly chilling blanched or par-cooked foods in ice water; prevents further cooking and sets colors
shortening - (1) a white, flavorless, solid fat formulated for baking or deep-frying; (2) any fat used in baking to tenderize the product by sho1tening gluten strands
shred - to cut into thin but irregular strips
shrinkage - the loss of weight in a food due to evaporation of liquid or melting of fat during cooking
shuck - (1) a shell, pod or husk; (2) to remove the edible portion of a food (for example, clam meat, peas or an ear of corn) from its shell, pod, or husk
sifting - shaking one or more dry substances through a sieve or sifter to remove lumps, incorporate air and mix
silver skin - the tough connective tissue that surrounds certain muscles; see Elastin
simmering - (1) a moist-heat cooking method that uses convection to transfer heat from a hot (approximately 185°F-205°F [85°C-96°C]) liquid to the food submerged in it; (2) maintaining the temperature of a liquid just below the boiling point
skim - to remove fat and impurities from the surface of a liquid during cooking
slice - to cut an item into relatively broad, thin pieces
slurry - a mixture of raw starch and cold liquid used for thickening
smoke point - the temperature at which a fat begins to break clown and smoke
smoking - any of several methods for preserving and flavoring foods by exposing them to smoke; includes cold smoking (in which the foods are not fully cooked) and hot smoking (in which the foods are cooked)
smorbrod - Norwegian cold open-faced sandwiches; similarly, the Swedish term smorgasbord refers to a buffet table of bread and butter, salads, open-faced sandwiches, pickled or marinated fish, sliced meats and cheeses
soda water - a flavorless water with induced carbonation, consumed plain or used as a mixer for alcoholic d rinks or soda fountain confections; also known as club soda and seltzer
soft water - water with a relatively high sodium concentration
solid pack - canned fruits or vegetables with little or no water added
soppressata - a hard, aged Italian salami, sometimes coated with cracked peppercorns or herbs
soufflé - either a sweet or savory fluffy dish made with a custard base lightened with whipped egg whites and then baked; the whipped egg whites cause the dish to puff when baked

sous-chef - a cook who supe1vises food production and who reports to the executive chef; he or she is second in conm1and of a kitchen
specifications; specs - standard requirements to be followed in procuring items from suppliers
spice - any of a large group of aromatic plants whose bark, roots, seeds, buds or berries are used as a flavoring; usually used in dried form, either whole or ground
spring form pan - a circular baking pan with a separate bottom and a side wall held together with a clamp that is released to free the baked product
spring lamb - the meat of sheep slaughtered before they have fed on grass or grains
spring water - water obtained from an underground source that flows naturally to the earth's surface
squab - the class of young pigeon used in food service operations
standardized recipe - a recipe producing a known quality and quantity of food for a specific operation
staples - (1) certain foods regularly used throughout the kitchen; (2) certain foods, usually starches, that help form the basis for a regional or national cuisine and are principal components in the diet
static menu - a menu offering patrons the same foods every day
station chef - the cook in charge of a particular department in a kitchen
steak - (1) a cross-section slice of a round fish with a small section of the bone attached; (2) a cut of meat, either with or without the bone
steamer - a set of stacked pots with perforations in the bottom of each pot; they fit over a larger pot filled with boiling or simmering water and are used to steam foods; (2) a perforated inse1t made of metal or bamboo placed in a pot and used to steam foods; (3) a type of soft-shell clam from the East Coast; (4) a piece of gas or electric equipment in which foods are steamed in a sealed chamber
steaming - a moist-heat cooking method in which heat is transferred from steam to the food being cooked by direct contact; the food to be steamed is placed in a basket or rack above a boiling liquid in a covered pan
steel - a tool, usually made of steel, used to hone or straighten knife blades
steep - to soak food in a hot liquid in order to either extract its flavor or soften its texture
steers - male cattle castrated prior to maturity and principally raised for beef
sterilize - to destroy all living microorganisms
stewing - a combination cooking method similar to braising but generally involving smaller pieces of meat that are first blanched or browned, then cooked in a small amount of liquid that is served as a sauce
stirring - a mixing method in which ingredients are gently mixed by hand until blended, usually with a spoon, whisk or rubber spatula
stock (French fond) - a clear, un-thickened liquid flavored by soluble substances extracted from meat, poultry or fish and their bones as well as from a mirepoix, other vegetables and seasonings
strain - to pour foods through a sieve, mesh strainer or cheesecloth to separate or remove the liquid component
streusel - a crumbly mixture of fat flour, sugar and sometimes nuts and spices, used to top baked goods
subcutaneous fat - also known as exterior fat; the fat layer between the hide and muscles

submersion poaching - a poaching method in which the food is completely covered with the poaching liquid
sub-primal cuts - the basic cuts produced from each primal
sucrose - the chemical name for common refined sugar; it is a disaccharide, composed of one molecule each of glucose and fructose
sugar - a carbohydrate that provides the body with energy and gives a sweet taste to foods
sushi - cooked or raw fish or shellfish rolled in or se1ved on seasoned rice
sweat - to cook a food in a pan (usually covered), without browning, over low heat until the item softens and releases moisture; sweating allows the food to release its flavor more quickly when cooked with other foods
sweetbreads - the thymus glands of a calf or lamb
tang - the portion of a knife's blade that extends inside the handle
tart - a sweet or savory filling in a baked crust made in a shallow, straight-sided pan without a top crust
tartlet - a small, single-serving tart
taste - the sensations, as interpreted by the brain, of what we detect when food, drink or other substances come in contact with our taste buds
tempeh - fermented whole soybeans mixed with a grain such as rice or millet; it has a chewy consistency and a yeasty, nutty flavor
temper- to heat gently and gradually; refers to the process of slowly adding a hot liquid to eggs or other foods to raise their temperature without causing them to curdle
temperature danger zone - the broad range of temperatures between 41°F and 135°F (5°C and 57°C) at which bacteria multiply rapidly
tempering - a process for melting chocolate during which the temperature of the cocoa butter is carefully stabilized; this keeps the chocolate smooth and glossy
terrine - (1) traditionally, a loaf of coarse forcemeat cooked in a covered earthenware mold and without a crust; today, the word is used interchangeably with pate; (2) the mold used to cook such items, usually a rectangle or oval shape and made of ceramic
thickening - agents- ingredients used to thicken sauces; include starches (flour, cornstarch and arrowroot), gelatin and liaisons
timbale - (1) a small pail- shaped mold used to shape foods; (2) a preparation made in such a mold
toque (toke) - the tall white hat worn by chefs
torchon - French for a cloth or towel, such as a dishcloth. The term is sometimes used to refer to dishes in which the item has been shaped into a cylinder by being wrapped in a cloth or towel.
tossed salad - a salad prepared by placing the greens, garnishes and salad dressing in a large bowl and tossing to combine
total recipe cost - the total cost of ingredients for a particular recipe ; **it** does not reflect overhead, labor, fixed expenses or profit
tourner - to cur into football-shaped pieces with seven equal sides and blunt ends
toxins - by-products of living bacteria that can cause illness if consumed in sufficient quantities
tranche - an angled slice cut from fish fillets
trans fats - a type of fat created when vegetable oils are solidified through hydrogenation
tripe - the edible lining of a cow's stomach

truffles - (1) flavorful tubers that grow near the roots of oak or beech trees; (2) rich chocolate candies made with ganache
truss - to tie poultry with butcher's twine into a compact shape for cooking
tube pan - a deep round baking pan with a hollow rube in 1he center
unit cost - the price paid to acquire one of the specified units
univalves - single-shelled mollusks with a single muscular foot, such as abalone
unsaturated fats - fats that are normally liquid (oils) at room temperature; they may be monounsaturated (from plants such as olives and avocados) or polyunsaturated (from grains and seeds such as corn, soybeans and safflower as well as from fish)
vacuum packaging - a food preservation method in which fresh or coo ked food is placed in an airtight container (usually plastic). Virtually all air is re moved from the container through a vacuum process, and the container is then scaled.
vanilla custard sauce - also known as *crème anglaise*; a stirred custard made with egg yolks, sugar and milk or half-and-half and flavored with vanilla; served with or used in dessert preparations
vanillin - (1) whitish crystals of vanilla flavor that often develop on vanilla beans during storage; (2) synthetic vanilla flavoring
variety - the result of breeding plants of the same species that I have different qualities or characteristics; the new **variety meats -** *see* offal
veal - the meat of calves under the age of nine months
veloute - a leading sauce made by thickening a white stock (fish, veal, or chicken) with roux
venison - flesh from any member of the deer family, including antelope, elk, moose, reindeer, red- tailed deer, white-tailed deer, mule deer and axis deer
vent - (1) to allow the circulation or escape of a liquid or gas; (2) to cool a pot of hot liquid by setting the pot on blocks in a cold water bath and allowing cold water to circulate around it
vinaigrette - a temporary emulsion of oil and vinegar seasoned with salt and pepper
vinegar - a thin , sour liquid used as a preservative, cooking ingredient and cleaning solution
viniculture - the art and science of making wine from grapes
vintner - a winemaker
viruses - the smallest known form of life; they invade the living cells of a host and take over those cells' genetic material, causing the cells to produce more viruses; some viruses can enter a host through the ingestion of food contaminated with those viruses
viscera - internal organs
vitamins - compounds present in foods in very small quantities ; they do not provide energy but are essential for regulating body functions
viticulture - the art and science of growing grapes used to make wines; factors considered include soil, topography (particularly, sunlight and drainage) and microclimate (temperature and rainfall)
vol-au-vents - deep, individual portion-sized puff pastry shells, often shaped as a heart, fish or fluted circle; they are filled with a savory mixture and served as an appetizer or main course
volume - the space occupied by a substance; volume measurements are commonly expressed as liters, teaspoons, tablespoons, cups, pints and gallons
wash - a glaze applied to dough before baking; a commonly used wash is made with whole egg and water

weight - the mass or heaviness of a substance; weight measurements are commonly expressed as grams, ounces and pounds
whetstone - a dense, grained stone used to sharpen or hone a knife blade
whipping- a mixing method in which foods are vigorously beaten in order to incorporate air; a whisk or an electric mixer with its whip attachment is used
white stew - see fricassee and blanquette
white stock - a light-colored stock made from chicken, veal, beef or fish bones simmered in water with vegetables and seasonings
whole butter- butter that is not clarified , whipped or reduced-fat
wine - an alcoholic beverage made from the fermented juice of grapes; may be sparkling (effervescent) or still (non-effervescent) or fortified with additional alcohol
work section - see work station
work station - a work area in the kitchen dedicated to a particular task, such as broiling or salad making; workstations using the same or similar equipment for related tasks are grouped together into work sections
yeasts - microscopic fungi whose metabolic processes are responsible for fermentation; they are used for leavening bread and in cheese, beer and wine making
yield - the total amount of a product made from a specific recipe; also , the amount of a food item remaining after cleaning or processing
yield grades - a grading program for mem that measures the amount of usable meat on a carcass
zest - the colored outer portion of the rind of citrus fruit; contains the oil that provides flavor and aroma

APPENDIX

PROFESSIONAL ASSOCIATIONS

American Culinary Association (ACF), www.acfchefs.org
American Dietetic Association (ADA), www.eatright.org
American Hotel and Lodging Association (AHLA), www.ahla.org
American Institute of Baking (AIB), www.aibonline.org
American Institute of Wine and Food (AIWF), www.aiwf.org
American Personal Chef Association (APCA), www.personalchef.com
American Society for Healthcare Food Service Administrators (ASHFSA), www.ashfsa.org
Black Culinarian Alliance (BCA), www.blackculinarians.com
Bread Bakers Guild of America, www.bbga.org
Club Managers Association of America (CMAA), www.cmaa.org
Confrerie de la Chaine des Rotisseurs, www.chaineus.org
Dietary Managers Association (DMA), www.dmaonline.org
Foodservice Consultants Society International (FCSI), www.fcsi.org
Foodservice Educators Network International (FENI), www.feni.org
Food Truck Operation, Foodtruckoperators.com
Institute of Food Technologists (IFT), www.ift.org
International Association of Culinary Professionals (IACP), www.iacp.com
International Caterers Association, www.icacater.org
International Council of Cruise Lines, www.iccl.org
International Council on Hotel and Restaurant Institutional Education (ICHRIE), www.chrie.org
International Food Service Executives Association (IFSEA), www.ifsea.com
International Foodservice Manufacturers Association (IFMA), www.ifmaworld.com
International Inflight Food Service Association (IFSA), www.ifsanet.com
Les Dames d'Escoffier International, www.ldei.org
National Association of College and University Foodservice (NACUFS), www.nacufs.org
National Association of Foodservice Equipment Manufacturers (NAFEM), www.nafem.org
National Association for the Specialty Food Trade (NASFT), www.fancyfoodshows.com
National Food Processors Association, www.nfpa-food.org
National Ice Carving Association (NICA), www.nica.org
National Restaurant Association, www.restaurant.org
National Society for Healthcare Foodservice Management (HFM), www.hfm.org
Research Chefs Association (RCA), www.culinology.com
Retailer's Bakery Association (RBA), www.rbanet.com
School Nutrition Association (SNA), www.schoolnutrition.org
Societe Culinaire Philanthropique, www.societeculinaire.com
Society for Foodservice Management (SFM), www.sfm-online.org
United States Personal Chef Association (USPCA), www.uspca.com
Women's Foodservice Forum (WFF), www.womensfoodserviceforum.com

Women Chefs and Restaurateurs, www.womenfhefs.org

INDUSTRY RESOURCES

Agri Beef www.agribeef.com/education/
American Lamb Board www.americanlamb.com/chefs-corner/curriculamb/
Butterball Foodservice www.butterballfoodservice.com
Maple Leaf Farms www.mapleleaffarms.com
National Cattlemen's Beef Association
National Pork Board www.porkfoodservice.org
National Turkey Federation www.eatturkey.org
North American Meat Institute www.meatinstitute.org

Seafood

Alaska Seafood Marketing Institute www.alaskaseafood.org
Bureau of Seafood and Aquaculture www.freshfromflorida.com/Recipes/Seafood
National Aquaculture Association thenaa.net

Produce

American Egg Board www.aeb.org
Apricot Producers of California www.califapricot.com
Avocados from Mexico foodservice.avocadosfrommexico.com
California Cling Peach Board www.calclingpeach.com
California Cling Peach Board www.calclingpeach.com
California Avocado Commissionwww.californiaavocado.com
California Dried Plum Board www.californiadriedplums.org
California Endive www.endive.com
California Fig Advisory Board www.californiafigs.com
California Kiwifruit Commission www.kiwifruit.org
California Pear Advisory Board www.calpear.com
California Raisin Marketing Board * Dietary Tool Kit www.calraisins.org
California Strawberry Commission www.calstrawberry.com
California Table Grape Commission www.tablegrape.com
Cherry Marketing Institute www.choosecherries.com
Concord Grape Association www.concordgrape.org
Cranberry Institute www.cranberryinstitute.org
Cranberry Marketing Committee*Tool Kit www.uscranberries.com
Dole Packaged Foods *Cost Savings Calculator www.dolefoodservice.com

Florida Dept. of Citrus www.floridajuice.com
Hass Avocado Board *Tool Kit www.avocadocentral.com
Idaho Potato Commission *Cost & Sizing Guides www.idahopotato.com
Leafy Greens Council www.leafy-greens.org
Leaf Greens Marketing Association www.lgma.ca.gov/
Louisiana Sweet Potato Commission www.sweetpotato.org
Mushroom Council www.mushroomcouncil.org
National Honey Board *Teacher Guide www.honey.com
National Mango Board *Lesson Plans www.mango.org
National Onion Association*Lesson Plans www.onions-usa.org
National Processed Raspberry Council www.redrazz.org
National Watermelon Promotional Board www.watermelon.org
NC Sweet Potato Commission www.ncsweetpotatoes.com
New York Apple Association www.nyapplecountry.com
North American Blueberry Council www.blueberry.org
Northwest Cherry Growers www.nwcherries.com
Olives from Spain olivesfromspain.us/
Oregon Raspberries and Blackberries www.oregon-berries.com
Pacific Northwest Canned Pear Service www.eatcannedpears.com/
Pear Bureau Northwestwww.usapears.com
Pomegranate Council www.pomegranates.org
Potatoes USA www.PotatoGoodness.com
Produce for Better Health Foundation www.5aday.com
The Soyfoods Council www.thesoyfoodscouncil.com
U.S. Apple Association www.usapple.org
USA Rice Federation www.menurice.com
Washington Red Raspberry Commission www.red-raspberry.org
Washington State Apple Commission www.bestapples.com
Washington State Potato Commission www.potatoes.com
Wheat Foods Council *Tool kits and classroom materials www.wheatfoods.org
Wild Blueberry Assn. of North America www.wildblueberries.com

Oil, Spices and Seasonings

North American Olive Oil Association *Classroom materials www.aboutoliveoil.org

Nuts and Legumes

Almond Board of California*Tool Kit www.almonds.com/food-professionals
American Pistachio Growers www.americanpistachios.org/
California Walnut Board www.walnuts.org
National Peanut Board www.nationalpeanutboard.org

Dairy Products

Emmi Roth USA *Pairing information us.emmi.com/en
Real CA Milk www.realcaliforniamilk.com/foodservice/
Wisconsin Milk Marketing Board Pairing guides www.wisdairy.com

Specialty Foods

New York Wine & Grape Foundation www.nywine.com
Popcorn Boardwww.popcorn.org

Baking Ingredients

Guittard Chocolate Company www.guittard.com
Bay State Milling Co. www.baystatemilling.com

Manufacturing/Distributors

Barilla America www.barilla.com/en-us
Bay State Milling Co.
www.baystatemilling.com
Dole Packaged Foods *Cost Savings Calculator www.dolefoodservice.com
Knouse Foods www.knousefoodservice.com
SYSCO www.sysco.com
Unilever Food Solutions www.unileverfoodsolutions.us
Verterra Dinnerware www.verterra.com

Measurement and conversion charts

Formulas for Exact measurement

	WHEN YOU KNOW:	MULTIPLY BY:	TO FIND:
Mass (weight)	Ounces	28.35	grams
	Pounds	0.45	kilograms
	Grams	0.035	ounces
	Kilograms	2.2	pounds
Volume (capacity)	teaspoons	5.0	milliliters
	tablespoons	15.0	milliliters
	fluid ounces	29.57	milliliters
	cups	0.24	liters
	pints	0.47	liters
	quarts	0.95	liters
	gallons	3.785	liters
	milliliters	0.034	fluid ounces
Temperature	Fahrenheit	5/9 (after subtracting 32)	Celsius
	Celsius	9/5 (then add 32)	Fahrenheit

Rounded Measurement for Quick Reference

1 oz.		= 30 g
4 oz.		= 120 g
8 oz.		= 240 g
16 oz.	= 1 lb.	= 480 g
32 oz.	= 2 lb.	= 960 g
36 oz.	= 2¼ lb.	= 1000 g (1 kg)
1/4 tsp.	= 1/24 fl. oz.	= 1 ml
½ tsp.	= 1/12 fl. oz.	= 2 ml
1 tsp.	= 1/6 fl. oz.	= 5 ml
1 Tbsp.	= 1/2 fl. oz.	= 15 ml
1 C.	= 8 fl. oz.	= 240 ml
2 c. (1 pt.)	= 16 fl. oz.	= 480 ml
4 c. (1 qt.)	= 32 fl. oz.	= 960 ml
4 qt. (1 gal.)	= 128 fl. oz.	= 3.75 It
32°F		= 0°c
122°F		= 50°c
212°F		= 100°c

Conversion Guidelines

1 gallon	4 quarts
	8 pints
	16 cups (8 fluid ounces)

	128 fluid ounces
1 fifth bottle	approximately 1 ½ pints or exactly 26.5 fluid ounces
1 measuring cup	8 fluid ounces (a coffee cup generally holds 6 fluid ounces)
1 large egg white	1 ounce (average)
1 lemon	1 to 1 ¼ fluid ounces of juice
1 orange	3 to 3½ fluid ounces of juice

Scoop Sizes

Scoop Number	*Level Measure*
6	2/3 cup
8	1/2 cup
10	2/5 cup
12	1/3 cup
16	1/4 cup
20	3 1/5 tablespoons
24	2 2/3 tablespoons
30	2 1/5 tablespoons
40	1 3/5 tablespoons

The number of the scoop determines the number of servings in each quart of a mixture: for example, with a No. 16 scoop, one quart of mixture will yield 16 servings.

Ladle Sizes

Size	*Portion of a Cup*	*Number per Quart*	*Number per Liter*
1 fl. oz.	1/8	32	34
2 fl. oz.	l/4	16	17
2 2/3 fl. oz.	l/3	12	13
4 fl. oz.	1/2	8	8.6
6 fl. oz.	3/4	5 1/3	5.7

Canned Goods

SIZE	**NO. OF CANS PER CASE**	**AVERAGE WEIGHT**	**AVERAGE NO. CUPS PER CAN**
No.¼	1 & 2 doz.	4 oz.	1/2
No.½	8	8 oz.	1
No. 300	1 & 2 doz.	14 oz.	1 3/4
No. 1 tall (also known as 303)	2 & 4 doz.	16 oz.	2
No. 2	2 doz.	20 oz.	2 1/2
No. 2½	2 doz.	28 oz.	3 1/2
No.3	2 doz.	33 oz.	4
No. 3 cylinder	1 doz.	46 oz.	5 2/3

No. 5	**1** doz.	3 lb. 8 oz.	5 1/2
No. 10	6	6 lb. 10 oz.	13