Western Technical College

10317100 Food Science

Course Outcome Summary

Course Information

Description	Basic food science principles as related to cookery are the focus of study in this course. Cooking methods, as well as the function of chemistry of proteins, fats, carbohydrates, flavors and seasonings, are explored as part of the coursework.
Career Cluster	Hospitality and Tourism
Instructional Level	Associate Degree Courses
Total Credits	1
Total Hours	18

Textbooks

*Professional Cooking + Wileyplus. 9*th Edition. Copyright 2019. Gisslen, Wayne. Publisher: John Wiley & Sons, Inc. **ISBN-13:** 978-1-119-40901-4. Required.

Program Outcomes

1. Apply principles of safety and sanitation in food service operations.
2. Apply principles of nutrition.
3. Demonstrate culinary skills.

Course Competencies

1. Examine the effects of heat on food.

Assessment Strategies

1.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

1.1. you illustrate how caramelization, gelatinization, and dextrinization are created.
1.2. you illustrate what happens to fruit and vegetable fiber when heat is added.
1.3. you illustrate how additives affect the process of cooking fruits and vegetables.
1.4. you illustrate how coagulation and the Maillard reaction are created.
1.5. you illustrate what happens to connective tissue when heat is added.
1.6. you illustrate how acid affects coagulation and connective tissue.
1.7. you illustrate what happens to fats when heated.
1.8. you illustrate how added fats affect the heat transfer process.

1.9. you illustrate what heat does to other food components such as water content, minerals, vitamins, pigments, and flavors.

Learning Objectives

1.a. Examine what is heat.
1.b. Examine what heat does to carbohydrates.
1.c. Examine what heat does to fruit and vegetable fiber.
1.d. Examine what heat does to proteins.
1.e. Examine what heat does to fats and how added fats affect the heat transfer process.
1.f. Examine what heat does to other food components such as water content, minerals, vitamins, pigments, and flavors.

2. Examine methods of heat transfer.

Assessment Strategies

2.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

2.1. you illustrate the process of convection.
2.2. you illustrate the process of conduction.
2.3. you illustrate the process of radiation.
2.4. you illustrate the uses of fats in the heat transfer process.

Learning Objectives

2.a. Explore the process of convection.
2.b. Explore the process of conduction.
2.c. Explore the process of radiation.
2.d. Investigate the use of fats to aid in heat transfer.

3. Explore emulsions and their uses.

Assessment Strategies

3.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

3.1. you ascertain what makes a temporary emulsion.
3.2. you ascertain what makes a permanent emulsion.
3.3. you illustrate how mustard and other dressing ingredients work as stabilizers in temporary emulsions.
3.4. you illustrate how egg yolks and lecithin work as stabilizers in permanent emulsions.

Learning Objectives

3.a. Examine temporary emulsions.
3.b. Examine permanent emulsions.
3.c. Examine the use of stabilizers in emulsions.

4. Investigate thickeners and their uses.

Assessment Strategies

4.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

4.1. you ascertain the use of flour as a thickener.
4.2. you ascertain the use of cornstarch as a thickener.
4.3. you determine the difference between a roux, a beurre manie, and a slurry.
4.4. you determine the difference between a white, blond, and brown roux.
4.5. you ascertain reduction as a thickener and its uses.
4.6. you ascertain alternative thickeners and their uses.

Learning Objectives

4.a. Examine the use of wheat flour and cornstarch as thickeners.

4.b. Examine the use of a roux, beurre manie, and slurry as thickening methods.
4.c. Investigate the use of reduction as a thickener.
4.d. Investigate the use of alternative thickeners such as liaison, puree, breadcrumbs, arrowroot, alternative flours, and alternative starches.

5. Explore dry and moist heat cooking methods.

Assessment Strategies

5.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

5.1. you illustrate the saute and stir fry processes.
5.2. you illustrate the pan fry process.
5.3. you illustrate the deep fry process.
5.4. you illustrate the roasting and baking processes.
5.5. you illustrate the grilling and broiling processes.
5.6. you illustrate the steaming process.
5.7. you illustrate the simmering and poaching processes.
5.8. you illustrate the braising and stewing processes.

Learning Objectives

5.a. Examine the saute and stir fry processes.
5.b. Examine the pan fry process.
5.c. Examine the deep fry process.
5.d. Examine the roasting and baking processes.
5.e. Examine the grilling and broiling processes.
5.f. Examine the steaming process.
5.g. Examine the simmering and poaching processes.
5.h. Examine the braising and stewing processes.

6. Explore heat management.

Assessment Strategies

6.1. Written Objective Test or Quiz

Criteria

You will know you are successful when

6.1. you illustrate when and why you use either interior temperature or desired changes in the food as guides to "doneness".
6.2. you illustrate how cooking temperature and the speed of heat transfer affect the time it takes a food to reach "doneness".
6.3. you illustrate how individual characteristics and composition of the food such as size and temperature affect the time to reach "doneness".
6.4. you ascertain when and why to cover the pot and when to take off the cover.
6.5. you illustrate how speed of heat transfer affects how to cook and how long it takes to cook your food to the center.

Learning Objectives

6.a. Investigate what it means when food is "done".
6.b. Examine the factors involved in how much time it takes to achieve "doneness".
6.c. Examine ways and reasons to control heat to achieve "doneness".