



AMERICAN MEAT SCIENCE ASSOCIATION

Food Safety & Science

CERTIFICATION



CERTIFICATION BLUEPRINT

CERTIFICATION EXAM OVERVIEW

The AMSA Food Safety & Science Certification confirms that individuals have the essential knowledge and skills for the restaurant and culinary industries. The certification exam, hosted on the iCEV testing platform, consists of 100 questions. It evaluates understanding of food chemical principles, food handling and storage, sanitation methods, and Hazard Analysis and Critical Control Points (HACCP) systems. The exam must be proctored in a controlled environment. Proctoring guidelines can be found at www.icevonline.com/proctoring-guidelines.

More information about the certification and testing platform can be found at www.icevonline.com/food-safety.

ABOUT THE AMERICAN MEAT SCIENCE ASSOCIATION

The American Meat Science Association (AMSA) is dedicated to advancing meat science through leadership, education, and professional development. They foster a learning community of meat scientists, industry partners, and other stakeholders. AMSA members conduct research and education in muscle growth, meat quality, food safety, processing technology, and consumer and marketing issues. Learn more at: <https://meatscience.org/>.

INDUSTRY STANDARD OVERVIEW



LEARNING OBJECTIVES & INDUSTRY STANDARDS

1. Food Chemistry Principles

1.1 Scientific Principles: Chemical Properties

- 1.1.1 To explain the periodic table of elements
- 1.1.2 To identify and explain how chemical symbols, formulas and equations are used in food science
- 1.1.3 To discuss elements, compounds, mixtures and formulas
- 1.1.4 To compare elements and compounds
- 1.1.5 To analyze chemical and physical changes in food
- 1.1.6 To examine the occurrence of specific chemical reactions

1.2 Scientific Principles: Solutions, Emulsions & Colloids

- 1.2.1 To describe heterogeneous and homogeneous mixtures
- 1.2.2. To identify the solvent and solute in a given solution
- 1.2.3 To discuss the effect of a solute and its concentration on the boiling and freezing points of a solution
- 1.2.4 To calculate the concentration of a solution using mass percent
- 1.2.5 To compare and contrast unsaturated, saturated and supersaturated solutions
- 1.2.6 To describe the properties of colloidal dispersions
- 1.2.7 To identify various food emulsions and the type of each emulsion

1.3 Scientific Principles: Enzymes

- 1.3.1 To describe how enzymes act as catalysts in chemical reactions
- 1.3.2. To explain the relationship between an enzyme and a substrate
- 1.3.3 To discuss the enzymes involved in digestion
- 1.3.4 To identify factors which affect enzyme activity
- 1.3.5 To explain how enzyme reactions are involved in food preparation

1.4 Food Fermentation

- 1.4.1 To analyze modern reasons food is fermented
- 1.4.2. To describe the types of fermentation
- 1.4.3 To use chemical equations to describe products of fermentation

1.5 Leavening Process

- 1.5.1 To describe the chemical and physical changes occurring during the leavening process
- 1.5.2. To compare different leavening agents
- 1.5.3 To explain the functions of each leavening agent
- 1.5.4 To identify how acid acts as a leavening agent

1.6 Heat & Food Production

- 1.6.1 To explain the relationship between molecular motion and temperature
- 1.6.2. To compare different heat transfer methods
- 1.6.3 To identify different phase changes in food production
- 1.6.4 To understand the impact temperature has on the rate of reactions

2. Food Handling, Packaging & Storage Procedures

2.1 The Science in Food Preservation

- 2.1.1 To explain dehydration and its uses
- 2.1.2 To discuss the roles of air temperature and movement in dehydration
- 2.1.3 To illustrate the role of canning in the food industry
- 2.1.4 To identify the advantages and disadvantages of each canning method

2.2 Food Packaging Options & Guidelines

- 2.2.1 To research and explain food packaging guidelines
- 2.2.2 To describe properties of containers used in commercial food packaging
- 2.2.3 To identify factors and use of controlled atmosphere packaging
- 2.2.4 To describe information required on a food label

3. Food Safety & Sanitation Methods

3.1 Food Science: Safety & Sanitation

- 3.1.1 To analyze food safety and sanitation practices
- 3.1.2 To evaluate food microorganisms and their functions
- 3.1.3 To understand harmful pathogens and food spoilage
- 3.1.4 To demonstrate proper management processes related to safety and sanitation

4. Hazard Analysis Critical Control Point (HACCP) Systems

4.1 Principles of HACCP: Introduction

- 4.1.1 To define HACCP and its purpose in the food industry
- 4.1.2 To discuss the history of HACCP
- 4.1.3 To introduce the seven principles of HACCP

4.2 Principles of HACCP: Identifying Hazards in Food Processing

- 4.2.1 To identify biological, chemical and physical hazards
- 4.2.2 To examine sources of contamination in food processing
- 4.2.3 To introduce methods of managing hazards in food processing

4.3 Principles of HACCP: Conducting a Hazard Analysis

- 4.3.1 To identify biological, chemical and physical hazards which occur in a food process
- 4.3.2 To analyze the risk of hazards identified in the hazard analysis

4.4 Principles of HACCP: Identifying Critical Control Points

- 4.4.1 To define critical control points
- 4.4.2 To demonstrate the process used when identifying critical control points

4.5 Principles of HACCP: Establishing & Monitoring Critical Limits & Taking Corrective Actions

- 4.5.1 To define critical limits for critical control points

4.5.2 To demonstrate methods for monitoring critical limits

4.5.3 To explain corrective actions which can be completed when deviations occur

4.6 Principles of HACCP: Establishing Verification Procedures

4.6.1 To define the verification

4.6.2 To explain the importance of verification procedures

4.7 Principles of HACCP: Recordkeeping

4.7.1 To define recordkeeping

4.7.2 To explain the importance of proper recordkeeping and documentation