# Food Products and Processing Systems AG1

## Essential Questions:
1. How do the components and history of the food industry affect the development of food products and processing?
2. How do safety principles and recommend equipment and facility management techniques apply to the food products and processing industry?
3. What principles of science are utilized in the food products and processing industry?
4. How are food products selected and processed for storage, distribution, and consumption?

## Essential Vocabulary:
appearance, arable land, bacteria, Body mass index (BMI), calorie balance, carbohydrates, centrally controlled economy, color, commerce, consumers, contamination, customs, curd, curdling, dairy, deterioration, developed country, developing country, disaccharides, distribution, drying, evaporation, exports, fatty acids, flavor factors, food poisoning, free-market economy, freezing, fruit, geometric attributes, germs, grains, Hazard Analysis and Critical Control Points (HACCP), homogenization, imports, improved crops, irradiation, lipid, mechanization, microbiological, microorganism, minerals, monosaccharides, My Plate, nutrients, nutrition, obese, organoleptic quality, packaging, pasteurization, polysaccharides, preservation, protein, quality, radiation, refrigeration, sanitation, shelf life, smoking, soluble, spoilage, standard of living, sterilization, texture factors, undeveloped country, vegetables, vitamins, whey, zoonotic disease, yield

## Essential Understanding
The student will demonstrate competence in the application of scientific principles, practices and techniques in the processing, storage and development of food products.

## FPP.01: The student will examine components of the food industry and historical development of food products and processing.

### Prior Background Knowledge
**Required:**
- computer experience
- basic Math and ELA skills
- basic speaking and listening skills
- basic collaboration tools

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<tr>
<th>Students will know...</th>
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<tbody>
<tr>
<td>how to evaluate the significance and implications of changes and trends in the food products and processing industry.</td>
<td>agriculture impacts the local, state, national, and world economies.</td>
<td>discuss the history and describe and explain the components (e.g. processing, distribution, byproducts) of the food products and processing industry. (FS)</td>
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<tr>
<td>how to work effectively with industry organizations, groups, and regulatory agencies affecting the food products and processing industry.</td>
<td>government and technology both have roles in the world’s food supply.</td>
<td>evaluate changes and trends in the food products and processing industry. (FS)</td>
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<tr>
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<td>local, state, national, and world factors that will influence the future of agriculture.</td>
<td>predict trends and implications in the food products and processing industry.</td>
</tr>
</tbody>
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**Mycar.com**
Vocabulary:
- arable land
- bacteria
- centrally controlled economy
- commerce
- consumers
- contamination
- customs
- developed country
- developing country
- distribution
- exports
- food poisoning
- free-market economy
- germs
- imports
- improved crops
- irradiation
- mechanization
- microbiological
- microorganism
- sanitation
- soluble
- spoilage
- standard of living
- undeveloped country
- zoonotic disease

world’s population.
- many factors influence what people eat and use for clothing and shelter.
- food processing and packaging is done to ensure that foods are safe.

industry. (FS)
- identify and explain environmental and safety concerns about the food supply. (FS)
- discuss the issues of safety and environmental concerns about foods and food processing (e.g. Genetically Modified Organisms, microorganisms, contamination, irradiation). (FS)
- explain the purposes of organizations that are part of or regulate the food products and processing industry. (FS)
- evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies. (FS)
- explain the importance and usage of industry standards in food products and processing. (FS)
- discuss the application of industry standards in the food products and processing industry. (FS)
FPP.02: The student will apply safety principles; recommend equipment and facility management techniques to the food products and processing industry.

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<tbody>
<tr>
<td>• computer experience</td>
<td>• how to manage operational procedures and create equipment and facility maintenance plans.</td>
<td>• consumers can avoid many serious food-related illnesses by following basic food safety principles in the home.</td>
<td>• explain the importance of developing and maintaining Sanitation Standard Operating Procedures (SSOP). (FS)</td>
</tr>
<tr>
<td>• basic Math and ELA skills</td>
<td>• how to implement Hazard Analysis and Critical Control Point (HACCP) procedures to establish operating parameters.</td>
<td>• food quality factors can be maintained or improved.</td>
<td>• explain the purpose of Good Manufacturing Practices (GMP). (FS)</td>
</tr>
<tr>
<td>• basic speaking and listening skills</td>
<td>• how to apply safety and sanitation procedures in the handling, processing, and storing of food products.</td>
<td>• hazard Analysis and Critical Control Point (HACCP) is a preventive food safety system.</td>
<td>• identify reasons for using a planned maintenance program to maintain equipment and facilities. (FS)</td>
</tr>
<tr>
<td>• basic collaboration tools</td>
<td></td>
<td></td>
<td>• describe contamination hazards (physical, chemical, and biological) associated with food products and processing. (FS, PG, AAP)</td>
</tr>
</tbody>
</table>

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FS105

**Vocabulary:**
- appearance
- color
- flavor factors
- geometric attributes
- Hazard Analysis and Critical Control Points (HACCP)
- nutrition
- texture factors

**Students will understand that...**
- consumers can avoid many serious food-related illnesses by following basic food safety principles in the home.
- food quality factors can be maintained or improved.
- hazard Analysis and Critical Control Point (HACCP) is a preventive food safety system.

**Students will be able to...**
- explain the importance of developing and maintaining Sanitation Standard Operating Procedures (SSOP). (FS)
- explain the purpose of Good Manufacturing Practices (GMP). (FS)
- identify reasons for using a planned maintenance program to maintain equipment and facilities. (FS)
- describe contamination hazards (physical, chemical, and biological) associated with food products and processing. (FS, PG, AAP)
- explain techniques and procedures for the safe handling of food products. (FS)
- evaluate food product handling procedures. (FS)
- describe the importance of performing quality-assurance tests on food products. (FS)
- perform quality-assurance tests on food products. (FS)
- describe the effects food-borne pathogens have on food products and humans.
FPP.03: The student will apply principles of science to the food products and processing industry.

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<tr>
<td>• computer experience</td>
<td>• how to apply principles of science to food processing to provide a safe, wholesome and nutritious food supply.</td>
<td>• modern agriculture has a major role in basic human nutrition.</td>
<td>• discuss how research and industry developments lead to improvements in the food products and processing industry. (FS)</td>
</tr>
<tr>
<td>• basic Math and ELA skills</td>
<td></td>
<td>• every five years the federal government revises and releases a new version of &quot;Dietary Guidelines for American&quot;.</td>
<td>• explain the application of chemistry and physics to food science. (FS)</td>
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<tr>
<td>• basic speaking and listening skills</td>
<td></td>
<td>• chemicals in foods affect the body's ability to function.</td>
<td>• explain the My Plate graphic in relation to essential nutrients for the human diet. (FS)</td>
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<tr>
<td>• basic collaboration tools</td>
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<td>• compare and contrast the nutritive value of food and food groups. (FS)</td>
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<td>• discuss common food constituents (e.g. proteins, carbohydrates, fats,</td>
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Vocabulary:
- body mass index (BMI)
- calorie balance
- carbohydrates
- dairy
- disaccharides
- fatty acids

Adopted September 14, 2015
- fruit
- grains
- lipid
- minerals
- monosaccharides
- My Plate
- nutrients
- obese
- polysaccharides
- protein
- vegetables
- vitamins

- vitamins, minerals. (FS)
- compare and contrast food constituents and their relative value to product taste, appearance, etc.) (FS)
- analyze food products to identify food constituents. (FS)
- identify common food additives (e.g. preservatives, antioxidants, buffers, stabilizers, colors, flavors). (FS)
- describe the purpose of common food additives. (FS)
- explain the importance of food labeling to the consumer. (FS)
- explain the required components of a food label. (FS)
- prepare and label foods according to the established standards of regulatory agencies. (FS)
- describe factors in planning and developing a new food product (e.g., regulation, creativity, and economics). (FS)

FPP.04: The student will select and process food products for storage, distribution, and consumption.

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<tr>
<td>computer experience</td>
<td>how to utilize harvesting, selection and inspection</td>
<td>food deterioration includes changes in organoleptic</td>
<td>identify quality and yield grades of food products.</td>
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Adopted September 14, 2015
- basic Math and ELA skills
- basic speaking and listening skills
- basic collaboration tools

| techniques to obtain quality food products according to industry standards. |
| how to evaluate, grade, and classify processed food products. |
| how to process, preserve, package, and present food and food products for sale and distribution. |

| quality, nutritional value, food safety, aesthetic appeal, color, texture and flavor. |
| milk processing involves many steps and results in many products. |

Vocabulary:
- curd
- curdling
- deterioration
- drying
- evaporation
- freezing
- homogenization
- irradiation
- organoleptic quality
- packaging
- pasteurization
- preservation
- quality
- radiation
- refrigeration
- shelf life
- smoking
- sterilization

- discuss factors that affect quality and yield grades of food products. (FS)
- identify and describe foods derived from meat, egg, poultry, fish, and dairy products. (FS, AAP)
- discuss and describe qualities of processed meat, egg, poultry, fish, and dairy products. (FS, AAP)
- identify and describe products derived from fruits and vegetables. (FS)
- discuss desirable qualities of fruit and vegetable products. (FS)
- identify and describe products derived from grains, legumes, and oilseeds. (FS)
- discuss desirable qualities of grain, legume, and oilseed products. (FS)
- identify and explain common weights and measures used in the food products and processing industry. (FS)
- weigh and measure food products and perform conversions between units of measure. (AAP)
- explain methods and materials for processing
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<th>whey</th>
<th>yield</th>
<th>foods for sale as fresh-food products. (FS)</th>
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<td>identify methods of food preservation and give examples of foods preserved by each method. (FS)</td>
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<td>explain the processes of food preservation methods. (FS)</td>
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<td>evaluate ready-to-eat food products. (FS)</td>
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<td>explain materials and methods of food packaging and presentation. (FS)</td>
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<td>select and utilize packaging materials in storing processed foods and raw food products. (FS)</td>
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