

식품생명과학개론

[식품공학전공]

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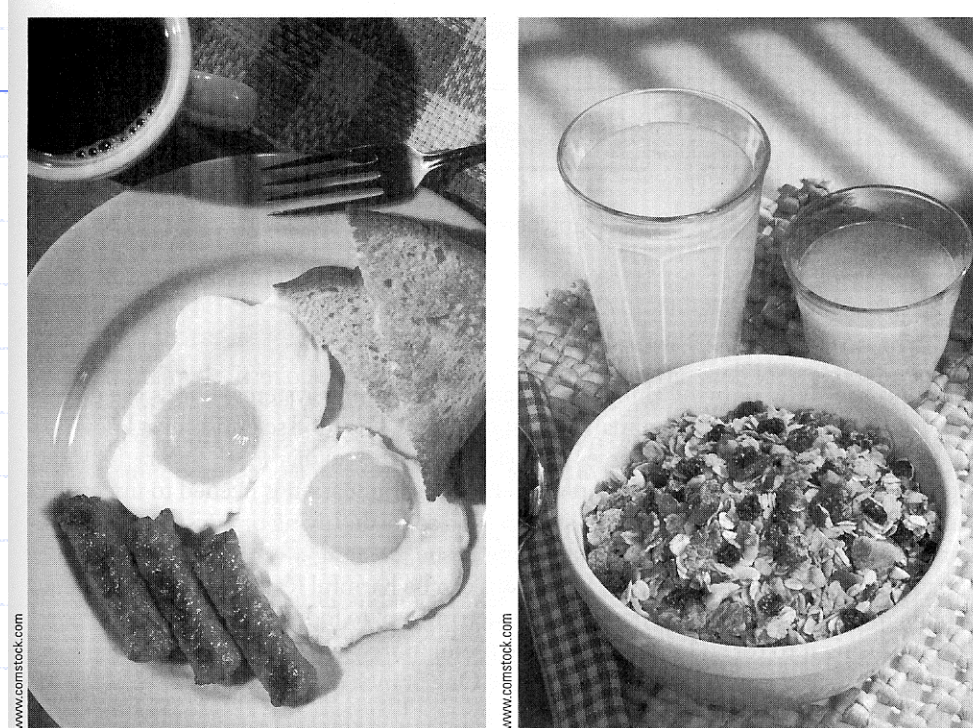
Dimensions of Food Science

- **Food Science** : the scientific study of raw food materials and their behavior during formulation, processing, packaging, storage, and evaluation as consumer food products
- **Nutrition** is related to how the body uses foods after we eat them to promote and maintain our health
- **Food technology** : the application of food science to the selection, preservation, processing, packaging, distribution, and use of safe, nutritious, and wholesome food
- **Food manufacturing** : the mass production of food products from raw animal and plant materials utilizing the principles of food technology

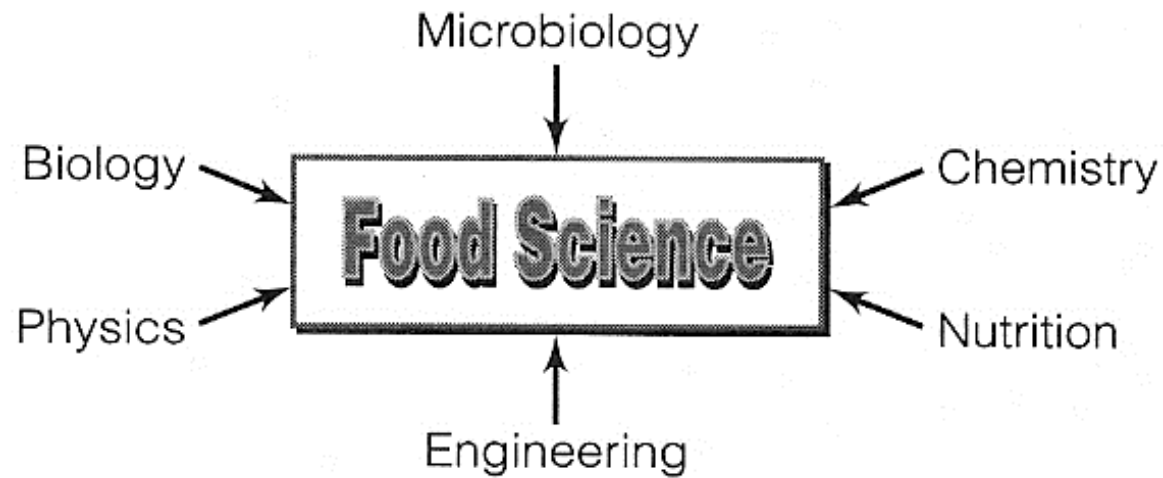
Fields of Food Science and Technology

- Food processing and manufacture
- Food preservation and packaging
- Food wholesomeness and safety
- Food quality evaluation
- Food distribution
- Consumer food preparation and use





- Egg white : protein denaturation
- Toasted bread : browning reaction
- Orange juice : sweetness and tartness
- Milk : homogenized, pasteurized, level of fat

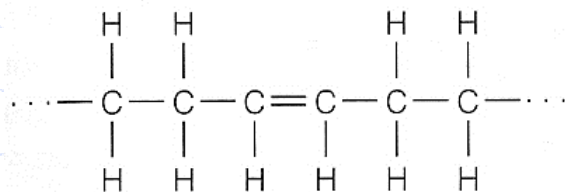


- **Nutrition** : (as the nutrients and other substances) Their action, interaction, and balance in relation to health and disease, and the processes by which the organism (body) ingests, digests, absorbs, transports, utilizes and excretes food substances.
- **Biology** : the study of living things and their life-sustaining systems.
Foods are derived from living organisms, either animal or plant in origin.

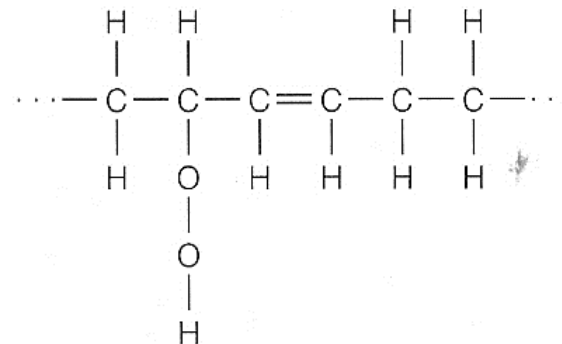
- **Chemistry** : the study of the atoms and molecules that make up the substances present in the universe, their arrangement into structures, and the reactions they participate in.

Foods such as meats, fruits and vegetables, and breads and cereals contain carbon (C), hydrogen (H), and oxygen (O) atoms.

Monounsaturated, unoxidized



Monounsaturated, oxidized to a hydroperoxide



- **Physics** : the study of matter and energy and is concerned with the physical changes that matter experiences under certain conditions.

Thermodynamics, electromagnetic energy (microwave, irradiation...).

- **Engineering** : the study of momentum, heat, and mass transfer.

Unit operation (processing, packaging, refrigeration, freezing, evaporation, drying...).

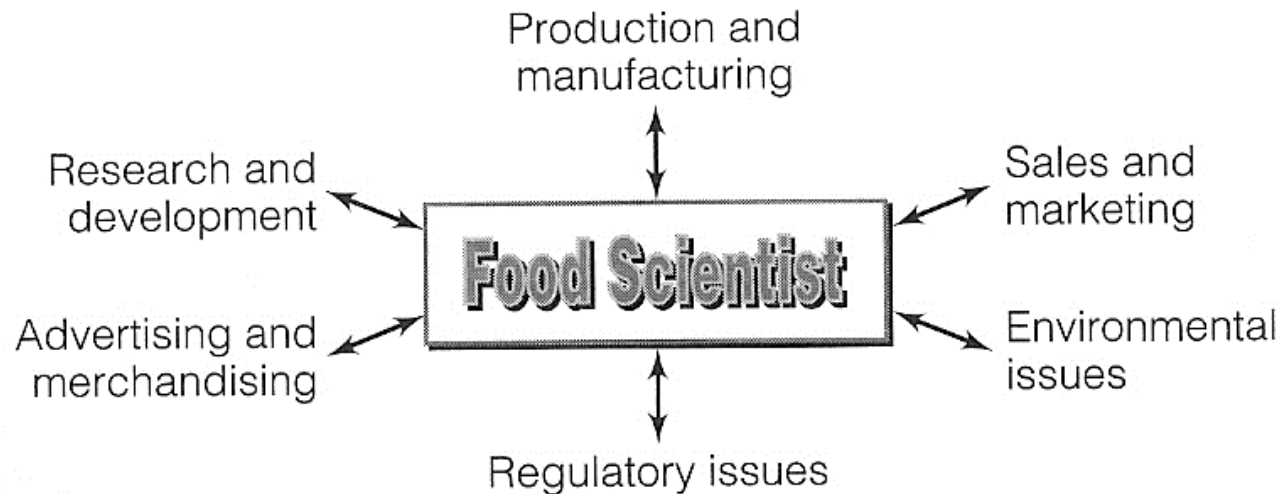
Food Processing

- **Food processing** technology : raw (animal or plant) food ingredients are converted into specific foods for consumption
- **History**

Technology Developed	Approximate Date
Milling of cereal grains into flour	10,000 BC
Baking unleavened bread	10,000 BC
Meat and fish smoking, salting, drying	4,000 BC
Grape and barley fermentation	3,000 BC
Yogurt fermentation	200 AD
Canning	1800s
Iron roller milling of flour	1800s
Milk pasteurization	1800s
Freeze-drying	1900s
Modified atmosphere packaging	1900s
Food irradiation	1900s

Food Scientist (Food Technologist)

- **Food scientist** : a person who applies scientific knowledge and technological principles to the study of foods and their components, either in a research setting (university, industry, or government) or a manufacturing setting
- **Food scientists do not work in isolation**



교과과정 [식품공학전공]

- **1학년**

수학, 화학, 생명과학개론, 물리학, 생물학, 통계학, 유기화학, 생리학

- **2학년**

생화학I/II, 식품미생물학, 분석화학, 식품공학I, 식품물리화학, 식품미생물학실험, 식품재료학, 영양생화학실험

- **3학년**

식품저장학, 식품공학II, 식품분석실험, 식품유통마케팅, 식품위생 및 법규, 식품가공학, 식품가공화학, 식품포장학, 식품가공학실험, 식품분자생물학

- **4학년**

식품생명 캡스톤디자인, 발효공학, 기능성식품학, HACCP 실무, 식품공학특수과제, 식품공정설계, 축수산식품가공학, 현장실습