Course Outline
Institut Pertanian Bogor - ACICIS' Agriculture Semester Program

Unit name	Food Safety and Sanitation (ITP322)
Department/ Faculty	Food Science and Technology Faculty of Agriculture Technology
Course credit (SKS)	2 (2-0)
Offered in	Odd semester (September-January), third year subject
Pre-requisite	-
Course Coordinator	Betty S.L. Jenie and Ratih Dewanti-Hariyadi
Language	Indonesian English ☑ Both

Course description
The course discusses the principles of food safety and sanitation, potential biological, chemical and physical hazards that may cause unacceptable consumer health risks, principles of Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP) as minimum requirements to produce quality and safe foods. The course discusses in detail the GMP and principles of food industry sanitation, covering safe food processing, personnel hygiene, cleaning and disinfection, water and air pollution, biofilm in food processing environment, water sanitation (chlorination), pest control, requirements for building and facilities (equipment); microbial indicators for sanitation; sanitation adequacy testing; waste water treatment and principles of Hazard Analysis Critical Control Points (HACCP) as food safety control.

Learning outcomes
Upon successful completion of this course the student will have been able to:

- Describe the importance of food safety and the role of Good Manufacturing Practices (GMP), Sanitation Standard Operating Procedures (SSOP) and food sanitation principles as the basic requirements to produce safe and wholesome foods.
- Differentiate chemical and physical hazards as well as illness due to chemical hazards.
- Differentiate foodborne pathogens, food infection and intoxication due to biological hazard.
- Describe microorganisms used as indicators including method of analysis (C4, analysis).
- Determine food processing sanitation.
- Describe personnel hygiene and distinguish the sanitary and unsanitary construction and design of buildings and equipment.
- Describe and distinguish types of soils, cleaning and disinfection system of food contact surfaces including types and functions, mechanism of action of cleaning agents and sanitizer (disinfectants), cleaning and sanitizing methods
- Describe the principles of air sanitation and pest control
- Describe and distinguish types and sources of water and air pollutants.
- Describe water quality used in food industry, and compare the principles of water sanitation by chemical and physical methods, disinfection (chlorination, UV and ozone), water softener, removal of soluble minerals, scale, taste and odour from water.
- Compare waste water treatment between aerobic and anaerobic system
- Describe HACCP principles in food industry.

Indicative assessment

- Group short paper and oral presentation (15%)
- Mid-exam (45%)
- Final exam (40%)

Contact Hours
2 hours lecture and discussions per week for 14 weeks; no laboratory work\

Readings

- Marriot, N.G., R.B. Gravani. 2006. Principles of Food Sanitation. Springer Science + Business Media Inc., New York.
- Jenie, B.S.L. 2004. Sanitasi Pangan. Penerbit Universitas Terbuka, Jakarta.
- Jenie, B.S.L. 2011. Penanganan Limbah Industri Pangan. Penerbit Universitas Terbuka, Jakarta.
- Jay, J.M. 1996. Modern Food Microbiology. An AVI Book Publ. Van Nostrand Reinhold. New York.
- Longree,K. 1980. Quantity Food Sanitation. AVI Publ. Co., Westport, Connecticut.
- BPOM RI. 2009. Penetapan Batas Maksimum Cemaran Mikroba dan Kimia dalam Makanan.
- BPOM RI. 2012. Cara Produksi Pangan yang Baik Industri Rumah Tangga.
- CAC/RCP. 2003. Recommended International Code of General Principles of Food Hygiene.

Course Topics (subject to change)

Week	Topics	Sub-topics
1	Introduction to Food Safety and Food Sanitation	▪ Factors of foodborne diseases ▪ Hazards in food safety ▪ Definition of GMP ▪ 8 keys of SSOP
2	Chemical and physical hazards	▪ Types and sources of chemical contaminants in food industry ▪ Types and sources of physical contaminants in food industry ▪ Toxicology aspects
3.	Biological hazard	▪ Infection and Intoxification ▪ Foodborne disease due to virus, bacteria, algae, parasit, shellfish
4.	Sanitation indicator micro-organisms and analysis	▪ Types and characteristics of microbes for indicator sanitation ▪ Analytical method of microbes for indicator sanitation
5.	Food processing sanitation (Production and process control)	▪ Sources of food contamination ▪ Safe methods in cooking, handling, serving and storage of foods
6.	Personnel Hygiene and cross contamination Sani-tary construction and design of building and equipments	▪ Cleaness, healthness and good practice of food processing personnel ▪ Supporting facilities ▪ Construction and design of food processing equipment ▪ Construction and design of food processing building
7.	Cleaning agents and methods	▪ Foodgrade cleaner ▪ Cleaning mechanism of cleaning agent ▪ Cleaning method
8.	Sanitizing agents and methods; Air sanitation and pest control	▪ Type and function of sanitizer ▪ Cleaning mechanism of sanitizer ▪ Disinfection method ▪ Air sanitation in food processing area ▪ Pest control
9.	Water and Air Pollution	▪ Types and sources of pollutants in water ▪ Criteria and analysis of water pollutants ▪ Types and sources of air pollutants

Week	Topics	Sub-topics
		▪ Biofilm in food processing industry
10-11	Water Sanitation	▪ Water requirement for food industry ▪ Steps in water cleaning ▪ Types of chlorin ▪ Principle of break point chlorination ▪ Water disinfection, chlorination, ultraviolet and ozonization ▪ Controling of soluble minerals, corrosion, taste and odour in water
12.	Waste product handling	▪ "Pond and oxidation ditch" ▪ Activated sludge method ▪ Trickling filter method ▪ RBC (rotating biological contactor) method ▪ Anaerobic waste treatment ▪ Nitrification method
13.	HACCP principles in food industry	▪ Understanding principles of HACCP in food industry ▪ Steps in designing HACCP system
14.	Group Presentation and Discussion: (10 Groups)	Selected topics