

Food Safety and Quality Professional Diploma Course Description and Study Plan

1. Core courses (total 18 Cr)

1. FSD 101, Food technology (3 Cr)
2. FSD 102, Food analysis with practicum (3 Cr, 2+1)
3. FSD 103, Food microbiology with practicum (3 Cr, 2+1)
4. FSD 104, Food nutrition and health (3 Cr)
5. FSD 105, Food spoilage and preservation (3 Cr)
6. FSD 106, Food safety, with practicum (3 Cr, 2+1)

2. Elective courses (Select 2, total 6 Cr)

1. FSD 107, Food packaging
2. FSD 108, Fermentation technology (prerequisite FSD 103)
3. FSD 109, Food additives
4. FSD 110, Food laws and legislation

Study Plan

Semester I	
Course Code	Course Title
FSD 101	Food technology
FSD 102	Food analysis with practicum
FSD 103	Food microbiology with practicum
One of the following courses: FSD 107, 109, or 110	Elective course

Semester II	
Course Code	Course Title
FSD 104	Food nutrition and health
FSD 105	Food spoilage and preservation
FSD 106	Food safety, with practicum
One of the following courses except the one that is selected in semester I: FSD 107, 108, 109, or 110	Elective course

Courses description

1. FSD 101, Food technology (3 Cr)

The course introduces the importance of basic science related to food technology with understanding the principles of food processing and the factors affecting the quality of food or food deterioration. It also will increase the knowledge related to the added value of food products and their shelf-life extension. Examples of different food processing applications for different foods in the food industry sector will be discussed.

2. FSD 102, Food analysis with practicum (3 Cr, 2+1)

The course will cover all information, skills and principles related to chemical, physical and microbiological analyses of foods according to the standard method. In this course, students will master many of the chemical analyses including moisture, ash, carbohydrates, vitamins, proteins, mineral and lipids. In addition, students will practice many of the microbiological analyses that will cover both qualitative and quantitative microbiological analyses to determine different microbes that are important in food industries and affect food quality and safety. Students will learn the application of different instruments and get hands on experience that will help them to effectively analyze food components. The course will also provide the basics of aflatoxin, antibiotic and GMO detection in foods.

3. FSD 103, Food microbiology with practicum (3 Cr, 2+1)

The course will cover the basic principles of microorganisms including bacteria, yeasts, molds, and viruses. It will also discuss the topics of microbial growth, function, metabolism, and the role of them in disease. The course will provide a hands-on practical experience of microbiological analysis such as bacterial identification using biochemical tests, Gram staining, API tests, and VITEK MS. Students will also learn the basic practical skills related to microbiology such as; the microbial growth curve, antibiotic sensitivity, physical and chemical biocontrol of microbial growth. The course will cover general procedures on the microbiological tests and analysis of pathogenic bacteria that will help students to work in food microbiology labs.

4. FSD 104, Food nutrition and health (3 Cr)

This course will study the relationship between food nutrition and human health to control bacterial infections. It will also study the function of food components such as carbohydrates, proteins, vitamins and lipids and their impacts on health. The nutritive value of foods and their metabolism such as the digestion and absorption of carbohydrates and proteins will be covered. In addition, the course will also discuss the importance of enzymes and hormones metabolism and metabolism disorders.

5. FSD 105, Food spoilage and preservation (3 Cr)

Food spoilage is the change in physical and chemical properties of the food that make it unsuitable for consumption. The course will cover all topics that cause the spoilage of food and cause any undesirable change of it including microorganisms such as bacteria and fungi. The course will discuss all techniques and methodologies that will extend the shelf life of foods.

6. FSD 106, Food safety, with practicum (3 Cr, 2+1)

The course covers the principles of food safety including the potential biological, chemical and physical hazards that affect the food safety and cause consumer health risks. The topics of Good Manufacturing Practices (GMPs), Prerequisite Programs (PRPs), Sanitation Standard Operating Procedures (SSOPs) will be covered. All topics should cover the personnel hygiene, cleaning and disinfection, water quality and sanitation, biofilm formation in working environment, pest control, building and facilities requirements, waste disposable and management, and the principles of Hazard Analysis Critical Control Points (HACCP). The course will provide students with hands on experience on biofilm formation, aseptic techniques, personal hygiene, and risk assessment. Students will also learn how to draw product flow diagram and identify both OPRPs and CCPs. They will learn how to set the critical limit, control measures and corrective actions to establish a successful HACCP plan. In addition, students will investigate different case studies to identify the best GMPs.

7. FSD 107, Food packaging

This course covers the application of food packaging and their effects on food chemical and physical properties. It also covers the functional properties of different packaging materials and their interaction with foods. This course will also discuss the impact of packaging materials on the food shelf life under storage conditions taking into consideration the factors that may cause food deterioration.

8. FSD 108, Fermentation technology

This course discusses the use of different microorganisms in fermentation technology including the principles of fermentation, metabolisms, strain selection and improvement, culture storage, and fermentation conditions. The course will cover the topics related to the production of enzymes, alcohol, amino acids, lactic acid, and other products. By the end, students will be able to use microorganisms in the food fermentation process using upstream and downstream processes.

9. FSD 109, Food additives

The course discusses the different types of additives and their functions, chemical properties, mechanisms of reactions, and applications in food processing. The course will discuss different types of additives and their use in different types of food. The safety and regulation related to food additives will also be covered.

10. FSD 110, Food laws and legislation

This course discusses all laws related to foods and food industry at national and international level. It will discuss the regulations that affect the processing, packaging, safety, nutrition and supply of foods according to the international food management system. In addition, the course will discuss the regulation of the Egyptian National Food Safety Authority (NFSA).