

**Master of Science in Food Quality and Safety****Program code: 182020****INTRODUCTION**

The Department of Food Sciences and Nutrition (College of Life Sciences) offers a graduate program that leads to the degree of Master of Science in Food Quality and Safety. The program is designed for the students to provide high-quality and career-oriented, cutting-edge graduate education in order to meet the requirements of government regulatory bodies and other agencies dealing with the food imports, storage, distribution, quality control, and food quality and safety policies development. The program offers both thesis and non-thesis options.

*According to the University Council decision dated 4/2/2007, Thesis students admitted with effect from September 2007 are exempted from the comprehensive examination.*

**PROGRAM REQUIREMENTS****36 (36) TOTAL COURSE CREDITS****15 (18) COMPULSORY COURSES**

1820-525	Food Quality Assurance	(3)
1820-529	Advanced Food Microbiology	(3)
1830-535	Fundamentals of Food Processing	(3)
1830-537	Food Control & Food Analysis	(3)
1830-593	Project (Non-Thesis Option)	(3)
2000-501	Scientific Writing and Communication Skills	(3)

**12 (18) ELECTIVE COURSES**

1820-510	Biostatistics for Food Science & Nutrition	(3)
1820-524	Risk Assessment & Management	(3)
1830-534	Food Needs and Food Security	(3)
1830-536	Food Traceability	(3)
1830-538	Food Storage & Handling	(3)
1830-539	Food Laws and Regulations	(3)
1830-540	Managerial Planning for Food Security	(3)
1830-541	Food Plant Layouts & Management	(3)
2000-503	Ethics and Professionalism	(2)

**9 COMPULSORY COURSES**

1830-597	Thesis	(0)
1830-598	Thesis	(0)
2000-599	Thesis	(9)

**COURSE DESCRIPTION****1830-534: FOOD NEEDS AND FOOD SECURITY****CR: 3**

Food production and consumption trends in Kuwait; relationship of food production to dietary pattern; food requirements, availability and population trends; food security to meet nutritional requirements of the nation; gender food security, dangers to food security; and challenges for meeting national food security through agricultural production, imports and proper storage will be given emphasis.

**1830-535: FUNDAMENTALS OF FOOD PROCESSING****CR: 3**

Course provides a comprehensive overview of basic principles of food processing, such as, use of low temperature, high temperature, chemical additives, irradiations, microwaves and other newer methods. The production of value-added processed products of plant and animal origin will also be discussed.

**1830-536: FOOD TRACEABILITY****CR: 3**

Fundamental concepts and processes associated with the identification, tracking and tracing of foods forwards or backwards, throughout the food continuum. Traceability and identification; tools and techniques for identification, tracing and tracking. Drivers of food traceability: food safety, food recalls, government regulatory requirements, quality attributes, logistics and inventory management, identity preservation, international food trade, food industry certification programs. Food traceability and national and international standards – GSI, ISO, Codex Alimentarius. ISO 9001, ISO 22000 and HACCP requirements for identification and food traceability. Universal Code Council (UCC) and Universal Product Code (UPC). Traceability information and data, traceability records.

**1830-537: FOOD CONTROL & FOOD ANALYSIS****CR: 3**

Course provides an overview of the core components of a national food control systems. Definition and importance of food controls; types of food control plans; template and individual food control plans; Control of imported foods; Food control plans for food industry, food service organizations, retail

outlets; USDA Pathogen Modeling Program; Training of employees about food sampling and recent advances in analytical procedures; various physico-chemical analytical methods employed in food control systems will also be discussed in this course.

**1830-538: FOOD STORAGE & HANDLING****CR: 3****PR:1830-535**

Principles of safe storage and handling of foods of plant and animal origin; insect/pest infestation during food storage, their control measures; safe storage of milk and milk products, meat, poultry, eggs and fishery products; post-harvest biology and maturity indices in fresh fruits and vegetables; proper handling and storage of fresh-cut fruits and vegetables; modified and controlled atmosphere storage techniques for fresh produce; proper disposal of food waste and pest control measures in food establishments will also be discussed.

**1830-539: FOOD LAWS AND REGULATIONS****CR: 3****PR:1830-525**

Recent advances in the international food laws & regulations, discussion of current legal and regulatory issues (local & global), Kuwaiti and GCC laws & regulations will be discussed. Importance of harmonization of local food regulations with the international food regulations will also be covered.

**1830-540: MANAGERIAL PLANNING FOR FOOD SECURITY****CR: 3****PR:1830-535**

Importance and relationship of food security with health and nutrition. Planning to make food consumption more sustainable and to increase resource efficiency, as well as reduce wastage associated with food production, processing, storage and distribution. Planning for more sustainable local agricultural production of poultry, dairy, fruits and vegetables, to provide a higher level of food security, and to encourage healthy eating habits. Impact of economic volatility on food security will also be discussed in this course.

**1830-541: FOOD PLANT LAYOUTS & MANAGEMENT**  
**CR: 3 PR:1830-540**

Selection of site, design, layout, equipment, machinery and building, for processing factories for foods of plant and animal origin will be discussed. Food plant sanitation, project formulation and evaluation, disposal of wastes from fruits, vegetables, cereals, meat and dairy industry, and by-products utilization will also be covered.

**1830-593: PROJECT**  
**CR: 3**

The student undertakes an independent project on a research topic of theoretical and/or experimental focus under the supervision of a faculty member listed in the supervisory list of the College of Graduate Studies. The objective is to provide the student with an opportunity to integrate and apply the knowledge gained throughout the course of study in a practical problem. The student must document the project in a scientific report following standard research writing guidelines and give a public presentation to the project examination committee.

**1830-597: THESIS**  
**CR: 0**

**1830-598: THESIS**  
**CR: 0**

**2000-599: THESIS**  
**CR: 9**