

1.	School	Agriculture
2.	Department	Horticulture and Crop Science
3.	Program title (Arabic)	دكتوراه في البستنة والمحاصيل
4.	Program title (English)	PhD. in Horticulture and Crop Science
5.	Track	Thesis

	Specialization #	Degree	Dept. #	School #	Year	Track	الخطة الدراسية المعتمدة
Plan Number		9	01	06	2013	Thesis	

First: General Rules & Conditions:

1. This plan confirms to the valid regulations of programs of graduate studies

2. Areas of specialty for admission in this program:

- Holders of the MSc. degree in:

First Priority: Plant Production

Second Priority: Horticulture and Crop Science

Third Priority: Agricultural Sciences

Fourth Priority: Biological Science or any of its Fields

Second: Special Conditions: None.

Third: Study Plan: Studying (54) Credit Hours as following:

1. Obligatory Courses (18) Credit Hours:

Course No.	Course Title	Credit Hrs	Theory	Practical	Pre/Co-requisite
0601901	Experimental Design and Analysis	3	3	-	
0601924	Sustainable Agriculture	3	3	-	
0601931	Plant Genetic Resources	3	3	-	
0601944	Plant Biochemistry	3	3	-	
0601945	Plant Bio-regulators	2	2	-	
0601946	Stress Physiology	3	3	-	
0601995	Seminar	1	1	-	

2. Elective Courses: Studying (18) Credit hours from the following:

Course No.	Course Title	Credit Hrs	Theory	Practical	Pre/Co-requisite
0601921	Protected Agriculture Management	3	3	-	
0601923	Plant Ecology	3	3	-	
0601925	Industrial Crops	3	3	-	
0601933	Quantitative Genetics in Plant Breeding	3	3	-	
0601934	Breeding Horticultural Crops	3	3	-	
0601936	Breeding for Stress Environment	3	3	-	
0601937	Plant Molecular Genetics	3	3	-	
0601941	Postharvest Physiology	3	3	-	
0601947	Seed physiology and Biochemistry	3	3	-	
0601948	Physiology of Plant Growth and development	3	3	-	
0604913	Plant Nutrition	3	3	-	
0606972	Weed Ecology and Physiology	3	3	-	

3. (0601999) Thesis: 18 credit hours

4. Pass the qualifying Exam (0601998)

5. Arabic Language Exam (2501700)

*notes

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Course Description

(0601901) Experimental Design and Analysis (3 Credit Hours)

This course covers advanced statistical methods, design and analysis for agricultural research, such as incomplete block design, Lattice design and Lattice equal confounding and their uses. This course also covers combined analysis of several experiments over space and time.

(0601921) Protected Agriculture Management (3 Credit Hours)

This course covers: introduction, factors affect plant growth and productivity, mains of protection and covering materials, environmental conditions control (ventilation, relative humidity, heating and cooling systems, illumination and carbon dioxide, etc.), management seedling production in various growing media, irrigation and fertilization management, soilless cultivation management, using plant growth regulators, managements of weeds and pest control, selected subjects in Green house management.

(0601923) Plant Ecology (3 Credit Hours)

Topic of this course emphasizes basic concepts of plant ecology including the components of ecological systems, ecological analysis and ecological modelling, plant responses to ecology, population ecology and their variation as well as types of flora in relation to geographical location and energy distribution and ecological preservation of plants.

(0601924) Sustainable Agriculture (3 Credit Hours)

This course covers on the concept of sustainable agriculture and its importance in food production systems. linkage between agricultural production systems and natural eco-systems. Agricultural production systems that are economically visible socially acceptable and environmentally sound.

(0601925) Industrial Crops (3 Credit Hours)

This course covers the management of important industrial crops, such as oil, sugar and important fiber crops, discussing the environmental factors affecting the production (quantity and quality), in addition to the economic importance of these crops and its role in the strategic agricultural production.

(0601931) Plant Genetic Resources (3 Credit Hours)

This course covers collection, evaluation, conservation, and utilization of plant genetic resources and discusses the ex-situ and in-situ conservation strategies. The course also covers the importance of biodiversity and its conservation and related international agreements.

(0601933) Quantitative Genetics in Plant Breeding (3 Credit Hours)

Quantitative genetics and statistical methodology in relation to plant breeding. Genetic models and field evaluation design, estimation of genetic parameters, the selection theory methods and their relationship with quantitative genetics and genotype environment interactions.

(0601934) Breeding Horticultural Crops (3 Credit Hours)

This course covers the application of breeding methods and techniques for the improvement of horticultural characteristics of vegetables, fruit trees and ornamental crops.

(0601936) Breeding for Stress Environment (3 credit Hours)

This course covers breeding for various stresses, such as drought, heat, cold, minerals and salinity in terms of genetics and breeding methodology. The course also covers recent research topics in relation to breeding for stress environment.

(0601937) Plant Molecular Genetics (3 Credit Hours)

This course covers DNA replication, transcription, translation and repair mechanism, DNA sequencing, protein biosynthesis post transcriptional and post translational modifications and mutations.

(0601941) Post-harvest Physiology (3 Credit Hours)

This course covers the biological and physiological considerations (respiration, composition quality, maturation, transpiration, and pathology) for a wide range of crops, methods and practical applications (standardization, inspection, harvesting, handling, packaging, temperature control, commercial storage, controlled atmosphere storage, and crop storage requirements for temperate, sub-tropical, leafy vegetables, tuberous bulbs, roots, tuberous roots, cut flowers, ornamentals and field crops.

(0601944) Plant Biochemistry (3 Credit Hours)

This course covers advanced discussion to recent topics related to plant biochemistry including: Photosynthesis, respiration, carbohydrate biosynthesis, lipid metabolism, nitrogen fixation (amino acid biosynthesis and proteins), purines, pyrimidines, nucleic acids, terpenes and terpenoids, chlorophyll and heams, alkaloids, plant phenolics and phytohormones and related compounds.

(0601945) Plant Bio-regulators (2 Credit Hours)

This course covers advanced discussion of plant hormones (biosynthesis, destruction, transport, metabolism), phytochrome and synthetic plant bio-regulators used in induction, stimulation or change horticultural and field plant characters, types and advantages of plant bio-regulators used in agriculture and problems associated with miss use of applications.

(0601946) Stress Physiology (3 Credit Hours)

This course covers concepts related to stress physiology and plant response to environmental stresses: temperature (freezing, chilling, high temperature,) water (flooding, drought) salinity, radiation and other stresses. Most recent literature on plant responses to stresses will be also discussed.

(0601947) Seed Physiology and Biochemistry (3 Credit Hours)

This course covers germination definitions, theories of seed dormancy, plant hormones, environmental factors, stresses and molecular aspects and metabolism of seed germination with emphasis on recent developments in these areas.

(0601948) Physiology of Plant Growth and Development (3 Credit Hours)

This course covers physiological bases of plant growth and development under various environments. Topics covered include the study of growth and developmental processes in

plants with emphasis on the regulatory effects of hormones environmental factors. The course also covers assimilation and growth with emphasis on photosynthesis partitioning and dynamics of growth, seedling vigour, light interception and canopy growth, root growth, reproduction and yield. Photo- and gravitropism; photo-morphogenesis and phytochrome; physiology of flower formation and development of seeds and fruits. Tools to study crop growth and development.

(0601995) Seminar

(1 Credit Hour)

This course covers the student presents a specialized seminar related to his research interest or any emerging issue in his field consulting the most recent literature and presents and discusses this subject. A scientific report is required.

(0604913) Plant Nutrition

(3 Credit Hours)

This course covers Nutritional aspects of plants as factors controlling crop production, nutrients uptake, translocation, assimilation and storage, deficiency and toxicity.

(0606972) Weed Ecology and Physiology

(3 Credit Hours)

The course covers weed biology including means of propagation and dissemination, ecological adaptations, emphasizing weediness and persistence, various weed interferences, development of resistance to herbicides. Comparative ecophysiology of weeds and crops, the course includes some literature studies and presentation of research papers.

الخطة الدراسية المعتمدة