# Study Plan
# Faculty of Agriculture
# Master in Horticulture & Crop Science
# (Thesis Track)

| | Serial # | Degree | Dep # | Faculty # | Year | Track |
|---|---|---|---|---|---|---|
| Plan Number | | 8 | 1 | 6 | 2015 | |

**First: General Rules & Conditions:**

1. This plan conforms to the valid regulations of the programs of graduate studies.
2. Areas of specialty for admission in this program: Holders of the Bachelor's degree in:
- The First Priority: Plant Production
- The second Priority**:** Horticulture & Crop Science
- Third Priority: General Agriculture or any related Subject

**Second: Special Conditions:**
- None.

**Third: Study plan: studying (33) credit hours as following:**

1. Obligatory courses: (15) credit hours:

| Course No. | Course Title | Credit Hrs. | Theory | Practical | Pre/Co-requisite |
|---|---|---|---|---|---|
| 0601701 | Experimental Design and Analysis | 3 | 3 | - | - |
| 0601702 | Research Methodology | 2 | 2 | - | - |
| 0601705 | Crop physiology | 3 | 3 | - | - |
| 0601732 | Plant Breeding | 3 | 3 | - | - |
| 0601743 | Plant Biotechnology | 3 | 3 | - | - |
| 0601795 | Seminar | 1 | 1 | - | - |

2. Elective courses: studying (9) credit hours from the following:

| Course No. | Course Title | Credit Hrs. | Theory | Practical | Pre/Co-requisite |
|---|---|---|---|---|---|
| 0601711 | Fruit Science | 3 | 3 | - | - |
| 0601712 | Floriculture | 3 | 3 | - | - |
| 0601713 | Vegetable Science | 3 | 3 | - | - |
| 0601721 | Field crops Science | 3 | 3 | - | - |
| 0601722 | Forage Crops Science | 3 | 3 | - | - |
| 0601723 | Cropping Systems | 3 | 3 | - | - |
| 0601735 | Breeding Field Crops | 3 | 3 | - | - |
| 0601742 | Plant Tissue Culture | 3 | 3 | - | - |
| 0601793 | Selected Topics in Horticulture and Field Crops | 3 | 3 | - | - |
| 0604702 | Nutrient Management | 3 | 3 | - | - |

3. Thesis: (9) Credit hours (0601799).

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**0601701 Experimental Design and Analysis** (3) **Credit Hours**

This course covers linear and multiple regression and correlation, analysis of variance and basic experimental design analysis. Mean separation procedures, Duncan's Multiple Range Test (DMRT), Turkey's W. procedure, Least Significant Difference (LSD), and Orthogonal contrasts. Students will be exposed to the uses of PC in experimental design and analysis.

**0601702 Research Methodology** **(** 2) **Credit Hours**

This Course covers the following subject: scientific research methods, proposal writing, search process for literature collection, materials and methods, data collection, entering data to the computer, statistical methods and analysis results and discussion, conclusions, and reference citation the student is required to make a presentation in the form of a seminar on the topic selected for the research proposal

**0601705 Crop Physiology** (3) **Credit Hours**

Topics covered in this course include: Plant water relationship with special emphasis on osmoregulation and water stress in higher plants. Plant light interaction including the role of light in photosynthesis, photo-periodism and photomorphogenesis. Plant hormones with special reference to their metabolism, transport and mode of action. Nitrogen metabolism and biological nitrogen fixation. Secondary plant products and defense compounds. Developmental physiology with emphasis on juvenility, senescence and abscission.

**0601711 Fruit Science** **(3) Credit Hours**

This course deals with scion-rootstock interaction, incompatibility between scion and rootstock, chilling requirements and chilling calculation, orchard replant problems, growth regulator use in fruit production, high density planting and recent trends in training and pruning fruit trees, light interception and penetration and determination of proper harvest time.

**0601712 Floriculture** **(3) Credit Hours**

Topics related to floriculture production including: bulbs, corms, rhizomes and tubers morphology, internal and external factors influencing flowering and its relation with plant hormones, use of plant bioregulators in growth and production of floricultural plants as well as discussion to most recent advancement in floriculture.

**0601713 Vegetable Science (3) Credit Hours**

This course discusses the physiological aspects of vegetables growth and development including: plant water relationships, nutrition, dormancy and seed germination, transplants and transplants acclimatization, flowering and fruit set and development with emphasis on most recent literature in the area of vegetable production.

**0601721 Field Crops Science (3) Credit Hours**

This course covers processes which relate to profitable management of crops, and thus determine productivity. Topics include fundamentals of physiological, environmental, and management events critical to crop productivity. Evaluation of various field crops production systems and practices to improve production in arid and semi-arid environment and long term influence of cultivation and fertilization.

**0601722 Forage Crops Science (3) Credit Hours**

This course includes different subjects including utilization of forage crops with special emphasis on hay and silage making. Nutrition value and forage composition and its role in farm animal disorders. In addition to the environmental and physiological aspects in forage management.

**0601723 Cropping Systems (3) Credit Hours**

Crop rotation, intensive cultivation monoculture, intercropping, multiple cropping, alternative farming systems including organic farming, low input sustainable agriculture. Tillage and soil management practices, under dry land and irrigated conditions.

**0601732 Plant Breeding (3) Credit Hours**

This course includes: heritability, breeding behavior, source population, genotype-environment interaction, methods of selection for self and cross-pollinated crops (Theory of application), and breeding methods for pest and stress conditions.

**0601735 Breeding Field Crops (3) Credit Hours**

This course is designed to discuss plant breeding foundation, like genetic variation, breeding hybrid varieties for some field crops and genotype X environment interaction, with emphasis on recent research work in plant breeding.

**0601742 Plant Tissue Culture (3) Credit Hours**

This course introduces the principles of plant tissue culture. It exposes students to the laboratory setup and equipment required in plant tissue culture. It also covers the media constituents as well as the preparation of media, and media preparation

required for use with different explants. The course covers the methods and techniques used in plant tissue culture and breeding.

**0601743 Plant Biotechnology (3) Credit Hours**

This course exposes students to the most recent developments in plant biotechnology especially vegetative propagation, haploid plants, somatic hybridization, somatic cell fusion, *in vitro* fertilization. Production of disease free and indexed plants as well as gene cloning and transformation.

**0601793 Selected Topics in Horticulture and Field Crops (3) Credit Hours**

Study of topic(s) not listed in the studying plan or other related topics. Offering such topics depends on availability of the specialist and on the importance of the offered topics as well as need of graduated students.

**0601795 Seminar (1) Credit Hours**

The student prepares 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.

**0604702 Nutrient Managements (**3) **Credit Hours**

Criteria of classification for plant Nutrients: Macronutrients: N, P, K, Mg, Ca Micronutrients: Fe, Zn, Mn, Mo, B, Cu, Co and S. Beneficial Nutrients Na, Cl, Se, Role and function of essential nutrients in plant, soil fertility evaluation, management of fertilizer application, Cropping system and soil fertility, crop rotation, Legumes in crop rotation, fertilizers & efficient use of water, nutrients cycles and balance in nature.