원 예 학 과

(DEPARTMENT OF HORTICULTURAL SCIENCE)

**Department Introduction**

The department of horticultural science was established for master’s and Ph.D. program in 1979 and 1981 respectively. 76 masters and 51 doctors have graduated so far. Recently we have 5 graduate students in master’s and 2 graduate students in Ph.D. program in 2013.

Horticultural science is very closely related with human life, which is covered with many fields including basic plant physiology, pathology, cultivation, genetics and breeding of vegetables, fruits, flowers or industrial crops. We also seek for morphological and ecological characteristics of horticultural products, virus free plant production and rapid multi-propagation using tissue culture technique. Biotechnology is such a good tool in horticultural science like plant transformation. Horticultural production and distribution as well as technology development for storage is one of the branch of horticultural science.

Our academic goal is education and training of students for production of manpower and superior researchers in horticultural fields. As standard of living was improving, the importance of horticultural science is getting bigger and it plays very vital roles in agricultural industry. Since it requires intensive and advanced technology for production, we expect more demand of new technology and scientific researches to better human life.

**List of Faculty Members**

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| --- | --- | --- | --- | --- |
| **Position** | **Name** | **Last School** | **Degree** | **Major** |
| Professor | Sang Gon Suh | Iowa State University  (1990.8) | Ph.D. | Plant Molecular Genetics |
| Associate Professor | Yong-Sun Moon | Cornell University  (2003.1) | Ph.D. | Vegetable Molecular Physiology |
| Associate Professor | Hae Keun Yun | Chungnam National University  (1996.8) | Ph.D. | Plant Pathology & Pomology |
| Assistant  Professor | Wook Oh | Seoul National University  (2007.8) | Ph.D. | Floriculture & Environment Control |
| Assistant  Professor | Kyeung Il Park | Yeungnam University  (2000.2) | Ph.D. | Plant Tissue Culture & Plant Molecular Biology |

**Academic program**

**Course Description**

■ Basic Major Courses

식물생장조절제특론 3 credit

(ADVANCED PLANT GROWTH SUBSTANCES)

The lecture is focused on understanding of growth and development of plant and kinds and functions of plant hormones. Also the lecture contains study of biosynthesis, metabolism, physiology and action of plant hormones. These knowledge of plant hormones extend application ranges for the improvement of productivity, quality, storability and marketing of horticultural products.

식물영양학특론 3 credit

(ADVANCED PLANT NUTRITION)

The subject in plant nutrition describes the transport mechanism of minerals, deficiency and excess symptoms including the effect of horticultural crop products. And introduce up-to-date topics and articles on plant nutrition.

식물유전학특론 3 credit

(ADVANCED PLANT GENETICS)

Topics on the plant transformation system and advanced plant genetics will be discussed.

■ Major Courses

개별연구(1) 3 credit

(INDEPENDENT STUDY (1))

개별연구(2) 3 credit

(INDEPENDENT STUDY (2))

식물생리학특론 3 credit

(ADVANCED PLANT PHYSIOLOGY)

원예학과세미나 1 credit

(SEMINAR IN HORTICULTURE)

■ Horticultural Science Major

환경원예학 3 credit

(ENVIROMENTAL HORTICULTURE)

This lecture is focused on the theories and current issues about atmospheric and rhizospheric environments influencing on plant growth and development, plant damages and acclimation responses to environmental stresses, and environment control technologies for optimal condition to improve crop productivity.

개화생리학 3 credit

(FLOWERING PHYSIOLOGY)

The aim of this lecture is to establish the basic knowledge for flowering physiology by understanding clearly about the concept on genetic information, juvenility, vernalization, and photoperiodism that are related to blooming.

개화조절론 3 credit

(FLOWERING CONTROL)

The aim of lecture is for application to horticultural industry by understanding the control of flowering in ornamental plants through day length, temperature and plant growth regulator treatment.

과수생리학 3 credit

(FRUIT TREE PHYSIOLOGY)

The lecture is focused on understanding of various physiological functions of fruit trees related to tree growth, formation of flower buds, photosynthetic productivity, use of water, control of fruiting, environmental stress.

과수영양학 3 credit

(NUTRITION OF FRUIT TREES)

The lecture provides information on how and why a fruit tree needs certain mineral elements and how they are generally absorbed. Also it provides knowledge on physical and chemical properties of soils that influence tree fruit nutrition. Emphasis is placed on discussion of role of important nutrients, especially N, K and Ca.

과수육종학 3 credit

(BREEDING OF FRUIT TREES)

The lecture provides information on theoretical study of plant improvement and breeding techniques such as germplasm exploration, pollen and seed management, tissue and embryo culture, mutation breeding, hybridization, selection.

과수학특론 3 credit

(ADVANCED POMOLOGY)

The lecture provides information on theoretical study of plant improvement and breeding techniques such as germplasm exploration, pollen and seed management, tissue and embryo culture, mutation breeding, hybridization, selection.

과실생리학 3 credit

(PHYSIOLOGY OF FRUITS)

The lecture provides information of physiology of fruit growth and development and biochemical and molecular basis of fruit ripening. A thorough understanding of fruit ripening is essential for improved quality. Storage and processing of fruits.

분자식물병리학 3 credit

(Molecular Plant Pathology)

This course is based on plant pathology and molecular biotechnology in the undergraduate school and provides information about principles of plant pathogens and defense response of plant in molecular biology level. This also provides the ability to work for the research with development of efficient management system for plant disease management method through studying advanced scientific topics about plant microbe interaction and genome analysis in molecular biology level

식물공장론 3 credit

(Plant Factory)

This lecture is focused on characteristics and kinds of plant factories, their detailed technologies such as soiless culture, plant production systems, lighting, environment control, and so on. Especially, this deals with application of light emitting diodes (LED) as a current issue.

식물번식학특론 3 credit

(ADVANCED PLANT PROPAGATION)

The lecture is focused on principle and technology on sexual (seed) and asexual (vegetative) propagation for practical application to horticultural industry of seed and cuttings production and so on.

식물병리학특론 3 credit

(ADVANCED PLANT PATHOLOGY)

Plant disease and plant-pathogen interactions for plant biotechnology will be reviewed. Discuss bacterial pathogen and plant virus. Molecular and physiological mechanism of plant disease and resistance. Host-pathogen recognition and response, resistance gene function, signal transduction, Agrobacterium, virus-host interactions, diagnosis of plant diseases, plant disease assessment methods, and the integration of disease management into commercial crop production practices will be discussed. Advanced topics in plant pathology, including biological control, cultural control, risk assessment of resistance gene deployment, genetic engineering for disease resistance, chemical control, tropical diseases, fungal genetics, and professional communications will be selected.

식물병방제학 3 credit

(PLANT DISEASE MANAGEMENT)

This course is based on plant pathology and management in the undergraduate school and provides information about principles of plant disease management with emphasizing on ecology of plant pathogens. This also provides the ability to work for the research with characteristics of management method (chemical, physical, biological, and integrated management) through studying advanced scientific topics about plant disease management.

식물분자생물학특론 3 credit

(ADVANCED PLANT MOLECULAR BIOLOGY)

The advanced study of plant molecular biology using DNA, RNA, and protein technology to elucidate plant physiology at molecular level.

식물생명공학특론 3 credit

(ADVANCED PLANT BIOTECHNOLOGY)

Engineering of agricultural, horticultural, and pharmaceutical crops using techniques of biotechnology. Topics will be selected for emphasis on examples of successful transgenic systems. Specific topics will be discussed to generate successful transgenic plants related to pathogen resistance, stress biology, postharvest physiology, yield and quality improvement, modification nutrition and secondary metabolites, and bioethics.

식물생화학실험 3 credit

(LABORATORY WORK OF PLANT BIOCHEMISTRY)

To broader the plant biochemistry lab work, students are require to conduct the lab work and discuss the procedure of the lab work. The aim of the lab experiment is how the lab work done.

식물생화학특론 3 credit

(ADVANCED PLANT BIOCHEMISTRY)

The aim of this topic is that how the relation of organelles will be discussed. Also, the function of cell organelles will be empathized.

채소발육생리론 3 credit

(GROWTH AND DEVELOPMENT OF VEGETABLE CROPS)

A study of the growth and development of vegetable crops, with emphasis on environmental conditions including physiological mechanism of phytohormones.

채소생리학특론 3 credit

(ADVANCED PHYSIOLOGY OF VEGETABLE CROPS)

A detail study of the flowering, seed germination, fruiting, and senescence including physiological disorders of vegetable crops.

채소원예특론 3 credit

(ADVANCED VEGETABLE CROP SCIENCE)

This course will be discussed on the current significant topics on management and production of vegetable crops.

채소육종론 3 credit

(BREEDING OF VEGETABLE CROPS)

The advanced theory for the recent vegetable breeding will be explained. the recent breeding methods also be discussed.

채소저장생리론 3 credit

(POSTHARVEST PHYSIOLOGY OF VEGETABLE PRODUCTS)

This course focuses on the methods of storage, the functional process and controlling physical and chemical changes in vegetable products after harvest.

채소품질론 3 credit

(QUALITY EVALUATION OF VEGETABLE PRODUCTS)

A study on the definition, classification and evaluation of quality of the vegetable products including methods of keeping quality, grading, nutritional value etc.

채종학특론 3 credit

(ADVANCED SEED PRODUCTION)

Self-incompatibility, male sterility, and plant breeding will be focused on this lecture. Especially, recent plant genetics and plant biochemistry will be discussed.

화훼가공및이용론 3 credit

(FLOWER PROCESSES AND UTILITY THEORY)

The lecture is aimed at learning about methods for developing and usage of higher value-added industrial product using floricultural crops and studying on various methodology for convenient handling of processed floricultural materials.

화훼장식학특론 3 credit

(ADVANCED FLOWER DECORATION)

The subject is aimed at systematical learning general knowledge of floral decoration ranged from meaning, history, traits, decoration skills according purpose and place, tool, mechanics, and accessories to processed floral goods such as dried, pressed, and dyed flower

화훼품질론 3 credit

(QUALITY OF ORNAMENTAL PLANTS)

The lecture is focused on structure and morphology of flowers, factors and estimation that effects on quality of ornamental plants, utilization of floral preservatives that affect on quality and vase life of cut flowers for improvement of knowledge on use, storage and transportation of cut flowers and potted plants.

화훼학특론 3 credit

(ADVANCED HORTICULTURAL SCIENCE)

The lecture is for flower color especially, genetic and environmental factor that affect on flower color expression, and finding out solutions on problems that are related to horticultural industry.