

# College of Agriculture and Life Sciences

## *\_\_Contact Information*

Phone: +82-62-530-2004

Fax: +82-62-530-2002

URL: <http://agric.jnu.ac.kr/>

- Department of Applied Plant Science
- Department of Horticulture
- Department of Applied Biology
- Department of Forest Resources
- Department of Wood Science and Engineering
- Department of Agricultural & Biological Chemistry
- Department of Food Science and Technology
- Department of Molecular Biotechnology
- Division of Animal Science
- Department of Rural and Biosystems Engineering
- Department of Agricultural Economics
- Department of Landscape Architecture
- Department of Bioenergy Science and Technology
- Department of Convergence Biosystems Engineering
- Research Centers
  - Institute of Agricultural Science and Technology
  - Asian Pear Research Institute
  - Bioenergy Research Center
  - Institute of Environmentally-Friendly Agriculture

## Department of Applied Plant Science

### *— Contact Information*

Phone: +82-62-530-2050

Fax: +82-62-530-2059

E-mail: yangnew@jnu.ac.kr

URL: [https://agro.jnu.ac.kr/agro\\_eng](https://agro.jnu.ac.kr/agro_eng)

## ■ What is Applied Plant Science?

The Department of Applied Plant Science teaches basic and applied scientific theories and methodology, technique and practice related to the production of indigenous crops for human life and health such as edible and special crops, quality new variety breeding and crop physiology. Currently, the professors provide a variety of educational and research spectrums ranging from crop breeding to global climate change countermeasures.

To clarify the life phenomena from crop molecular units to populations at the point of genetic, environmental, and interrelationships, and apply the principles to improve the productivity and quality of crop. It also deals with theories and techniques of crop production that harmonize with the natural and production ecosystems of human survival.

This major aims to create a new variety by using molecular biology techniques, to search for adaptation mechanism of crops to bad environment, to search for new functional plant resources, to identify the substance, to search for mechanism of action, to minimize the biological obstacles of crop production, To identify the responses of crops to global environmental changes, and to develop countermeasures.

Graduates are employed by national and public research institutes, government agencies, researchers and leaders of various seed and pesticide companies.

## ■ Professors

### ■ Applied Plant Science

- Han-Yong Kim, Ph.D.

[Rice Crop Science, [hyk1020@jnu.ac.kr](mailto:hyk1020@jnu.ac.kr)]

- Jonghan Ko, Ph.D.

[Crop Environmental Ecology,  
[jonghan.ko@jnu.ac.kr](mailto:jonghan.ko@jnu.ac.kr)]

- Ok Ran Lee, Ph.D.

[Special Crop Science, [mpizlee@jnu.ac.kr](mailto:mpizlee@jnu.ac.kr)]

- Bo-Keun Ha, Ph.D.

[Crop Genetics & Breeding, [bkha@jnu.ac.kr](mailto:bkha@jnu.ac.kr)]

- Jaeil Cho, Ph.D.

[Climatological Crop Physiology,  
[chojaeil@jnu.ac.kr](mailto:chojaeil@jnu.ac.kr)]

## ■ What Do You Study?

### ■ General Courses

General Biology 1 (3)

General Chemistry 1 (3)

### ■ Core Courses

Basic Lab of Crop Production 1 (2)

Basic Lab of Crop Production 2 (2)

### ■ Electives

Industrial Crop Science and Practice (3)  
Plant Breeding and Experiment (3)  
Food Crops 1 and Practice (3)  
Food Crops 2 and Practice (3)  
Principles of Crop Production (3)  
Climatological Crop Physiology (3)  
Plant Biochemistry (3)  
Genetics (3)  
Agricultural Meteorology (3)  
Seed Science (3)  
Soil and Production Environment (3)  
Crop Ecology (3)  
Environmental Vegetation Ecology (3)  
Biostatistics (3)  
Environmental Vegetation Management and Practice(3)  
Molecular Crop Breeding (3)  
Crop Molecular Genetics (3)

Quality Assessment and Management (3)  
Pragmatic management of climatic damage (3)  
Crop Growth Modeling (3)  
Farm Management (3)  
Principles of Crop Protection (3)  
Medicinal Plant Science (3)  
Production of Functional Materials (3)  
Environment Conservative Plant Production (3)  
Management of Crop Post-harvest (3)  
Plant Tissue Culture (3)  
Understanding of Agricultural Science (3)  
Capstone Design Practice (3)  
Field Practice 1 (2)  
Edible Plant Resources (3)  
Integrated Agro-ecosystem (3)  
Crop Production Systems (3)  
Introduction of Environmental Agriculture (3)

### ■ Minor Courses

21 credits must be chosen.

## Department of Horticulture

### *Contact Information*

Phone: +82-62-530-2060

Fax: +82-62-530-2069

E-mail: [yohong@jnu.ac.kr](mailto:yohong@jnu.ac.kr)

URL: <http://hort.jnu.ac.kr/>

### ■ What is Horticulture?

Department of Horticulture deals with theories and techniques for plant production harmonized with nature and agro-ecosystems, which are the basis of life. It also pursues the exploration of life phenomena in crop plants at various levels from plant molecular to community through understanding heredity, environment, and their interrelationships, in order to ensure both the productivity and quality of crop plants. The goal of the Department is to promote global talents through teaching and training on (1) breeding novel crop varieties using traditional and molecular tools, (2) understanding the mechanisms of plant adaptation to abiotic and biotic stresses, (3) identifying, understanding, and producing new substances in industrial and medicinal plants having specific functions, (4) establishing sustainable agricultural systems by minimizing limiting factors to crop production, and (5) understanding crop responses to global environmental change (GEC) and strategies to cope with GEC.

### ■ Professors

- |   |   |
|---|---|
| • Tae-Ho Han, Ph.D.<br>[Ornamental Plant Science, <a href="mailto:hanth@jnu.ac.kr">hanth@jnu.ac.kr</a> ]      | <a href="mailto:dronion@jnu.ac.kr">dronion@jnu.ac.kr</a>  |
| • Jeong-Hyun Lee, Ph.D.<br>[Greenhouse Horticulture, <a href="mailto:leetag@jnu.ac.kr">leetag@jnu.ac.kr</a> ] | • SangHyeon Lee, Ph.D.<br>[Pomology & Reproduction, <a href="mailto:pear@jnu.ac.kr">pear@jnu.ac.kr</a> ]                          |
| • Sung-Gil Kim, Ph.D.<br>[Horticultural Crop Breeding & Genetics,   | • Young Boon Lee, Ph.D.<br>[Horticultural Corp Quality Managements,<br><a href="mailto:dudqns2@jnu.ac.kr">dudqns2@jnu.ac.kr</a> ] |

### ■ Degree Requirements

Students are required to earn 130 credits to graduate.

### ■ What Do You Study?

#### ■ General Courses

General Biology 1 (3)  
General Chemistry 1 (3)  
Understanding of Science History (3)  
Writing in the Natural Sciences and Engineering(3)  
Career Plan and Self Understanding (2)

#### ■ Electives

Field Practice 1 (5)  
Field Practice 2 (5)

#### ■ Core Courses

General Botany (3)  
Introduction of Vegetable Crops (3)

Introduction of Ornamental Plant Science (3)  
Introduction of Pomology (3)  
Genetics (3)

### ■ Electives

Introduction to the horticultural sciences (3)  
Vegetable seedling (3)  
Molecular Biology (3)  
Biochemistry 1 (3)  
Plant Physiology 1 (3)  
Proposal construction for farming settlement(Capstone) (2)  
Basic principle and practice for farming settlement 1 (3)  
Promotion of Agricultural Business (3)  
Actual principle and practice for farming settlement 1 (3)  
Advanced principle and practice for farming settlement 1 (3)  
Propagation of Horticultural Crops (3)  
Horticultural Crop Product (Capstone Design) (3)  
Field vegetable production and agriphotovoltaic practice (3)  
Plant Pathology (3)  
Soilless Culture (3)  
Business administration in Agriculture (3)  
Basic principle and practice for farming settlement 2 (3)  
Actual principle and practice for farming settlement 2 (3)  
Advanced principle and practice for farming settlement 2 (3)  
Design of horticulture equipment(Capstone Design) (3)  
Ornamental Plant Breeding (3)  
Quality management of floricultural plant (3)  
Introduction of Pomology (3)  
Climate Change on Horticulture Industry (3)  
Biostatistics (3)  
Greenhouse horticulture (3)  
Principle of Plant Breeding (3)

### ■ Careers

Students become experts in agricultural industries. They find work as educators or researchers in government laboratories or private institutions. Other employment opportunities exist in seed and seedling companies, agro-chemical companies, agricultural cooperatives, and plant quarantine organizations. University positions such as assistantships in the areas of teaching and/or conducting are open to graduate students.

Plant morphology (3)  
Law and Regulation in Horticulture (3)  
Horticultural Plant Resources (3)  
Molecular Breeding of Horticultural Crops (3)  
Floral Design and Entrepreneurship1 (3)  
ICT adaptation of Horticultural Field Crops (3)  
Plant ecology (3)  
Greenhouse climate control (3)  
Advanced Vegetable Crop Science (3)  
Floral Design and Entrepreneurship 2 (3)  
Landscape and management of floricultural plant (3)  
Laboratory and Field Practice for Horticulture and Biotechnology1 (3)  
Laboratory and Field Practice for Horticulture and Biotechnology2 (3)  
Horticultural Therapy (3)  
Metabolomic research and practice for horticultural crops (3)  
Postharvest Management of Horticultural Crops (3)  
Seed Production (3)

### ■ Teaching Profession Courses

A Research Of Biology Teaching Materials & Teaching Method (3)  
Biology Education (3)  
A Course on Biology Logic and Essay Writing (2)

### ■ Minor Courses

General Botany (3)  
Introduction of Vegetable Crops (3)  
Introduction of Ornamental Plant Science (3)  
Introduction of Pomology (3)  
Genetics (3)

### ■ Minor Electives

6 credits must be chosen

## Department of Applied Biology

### *— Contact Information*

Phone: +82-62-530-2070

Fax: +82-62-530-2079

E-mail: [yckimyc@jnu.ac.kr](mailto:yckimyc@jnu.ac.kr)

URL: <http://agribio.jnu.ac.kr/>

### ■ What is Department of Applied Biology?

The Department of Applied Biology at Jeonnam National University is composed of 3 main fields: Plant Pathology, Entomology, and Stress Biology. The educational goal at Department of Applied Biology is to foster professional individuals who learn both basic and applied sciences on plant response to pathogens, agricultural pests, and environmental stresses that significantly diminish plant and crop productivity.

Plant Pathology field focuses mainly on plant-pathogen (bacteria, fungi, virus) interactions, molecular genetics to understand mechanisms and biological control of plant diseases, and ecology and evolutionary biology of plant-associated microbes. Entomology field focuses mainly on the damage analysis and integrated pest management by the fundamental studies of classification, phylogeny, chitin biotechnology, and ecology of insect pests. Interactions between microbial natural enemy and insect pests are also studied for the eventual biological control of agricultural insect pests. Stress Biology field focuses mainly on the identification and determination of potential genes involved in plant responses to environmental stresses (drought, high and low temperatures, salt, UV), which would provide novel means to develop stress-tolerant agronomic crops.

The Department's curricula cover all necessary subjects for basic and applied sciences. We will educate students with a vision of becoming leading scientists in future agriculture.

### ■ Professors

- Hun-Seung Kang, Ph.D.  
[Biochemistry,  
[hskang@jnu.ac.kr](mailto:hskang@jnu.ac.kr)]
- Young-Cheol Kim, Ph.D.  
[Plant Pathology,  
[yckimyc@jnu.ac.kr](mailto:yckimyc@jnu.ac.kr)]
- Yeon-Soo Han, Ph.D.  
[Insect Pathology,  
[hany@jnu.ac.kr](mailto:hany@jnu.ac.kr)]
- Cheol-Soo Kim, Ph.D.  
[Plant Functional Genomics,  
[cskim626@jnu.ac.kr](mailto:cskim626@jnu.ac.kr)]
- Kwang-Yeol Yang, Ph.D.  
[Molecular Plant Pathology,  
[kyyang@jnu.ac.kr](mailto:kyyang@jnu.ac.kr)]
- Ik-Soo Kim, Ph.D.  
[Insect Molecular Phylogenetics and Ecology,  
[ikkim81@jnu.ac.kr](mailto:ikkim81@jnu.ac.kr)]
- Yasuyuki Arakane, Ph.D.  
[Insect Chitin Biotechnology,  
[Yasuyuki Arakane@jnu.ac.kr](mailto:Yasuyuki_Arakane@jnu.ac.kr)]
- Rae-Dong Jeong, Ph.D.  
[Plant Virology,  
[jraed2@jnu.ac.kr](mailto:jraed2@jnu.ac.kr)]

### ■ Laboratories

- Plant Molecular Biology Lab
- Plant Pathology Lab

- Insect Pathology Lab
- Plant Molecular Biology Lab
- Plant Functional Genomics Lab

- Insect Molecular Phylogenetics and Ecology Lab
- Insect Chitin Biotechnology Lab
- Plant Virology Lab

## ■ Degree Requirements

Students are required to earn 130 credits to graduate.

## ■ What Do You Study?

### ■ Core Courses

- Insect Pests of Plants (3)
- Plant Pathology (3)
- Laboratory and Field Practice for Applied biology (3)

### ■ Electives

- Insect Physiology (3)
- Quarantine Insect Pest (3)
- Functional Insect Genomics (3)
- Insect Innate Immunity and its application (3)
- Insect Diversity (3)
- Insect Molecular Diagnosis (3)
- Insect Physiology (3)
- Insect Biotechnology (3)
- Insect-inspired biomimetics (3)
- Insect Ecology (3)
- Insect gut symbionts and its application (3)
- Insect cuticle structure and function (3)
- Climate Response and Plant Stress Control (3)
- Climate Smart Plant Disease Control (3)
- Molecular Insect Pathology (3)
- Molecular Vector Entomology (3)
- Molecular Biology (3)
- Biostatistics (3)
- Biochemistry 1 (3)
- Biochemistry 2 (3)
- Cell Biology (3)
- Introduction of Plant Quarantine (3)
- Plant Virology (3)
- Plant Pathology Lab. (1)
- Phytobacteriology (3)
- Clinical Plant Pathology (3)
- Molecular Plant Pathology (3)

- Plant Molecular Physiology (3)
- Plant Molecular Genetics (3)
- Plant Molecular Biotechnology (3)
- Plant Physiology 1 (3)
- Plant Physiology 2 (3)
- Plant Biotechnology (3)
- Plant Genetic Engineering (3)
- Undergraduate research in plant doctor (3)
- Phytopathogenic fungal pathology (3)
- Botany (3)
- Insect Pest Experiment (1)
- Plant Environmental Physiology (3)
- Trends in RNAi-based pest control (3)
- Genetics (3)
- General Microbiology (3)
- Resource Entomology (3)
- Crop production and management (3)
- Medical Vector Biology (3)
- Insect Control (3)
- Introduction of Plant-Microbe Interactions (3)

### ■ Teaching Profession Courses

- Biology Education (3)
- A Research of Biology Teaching Materials & Teaching Method (3)
- A Course on Biology Logic and Essay Writing (2)

### ■ Minor Courses

- Insect Pests of Plants (3)
- Plant Pathology (3)
- Laboratory and Field Practice for Applied biology (3)

### ■ Minor Electives

- 12 credits must be chosen

## ■ Careers

Students become experts in agricultural industries. They find work as educators or researchers in government laboratories or private institutions. Other employment opportunities exist in seed and seedling companies, agro-chemical companies, agricultural cooperatives, and plant quarantine organizations.

University positions such as assistantships in the areas of teaching and/or conducting are open to graduate students.

## Department of Forest Resources

### *— Contact Information*

Phone: +82-62-530-2080

Fax: +82-62-530-2089

URL: <http://forestry.jnu.ac.kr>

### ■ What is Forest Resources?

Forests occupy 65% of the land area in Korea. The mission of the Major in Forestry is to educate and engage the next generation of scholars, practitioners, and users of the forests, to conduct distinctive problem-solving and fundamental research on nature and use of forests and related resources, and to share discoveries and knowledge with others.

### ■ Major in Forest Resources

The Major in Forestry is dedicated to the understanding, effective management, and sustainable use of forests to support the national economy and public welfare, and to conserve the wider forest ecosystem.

### ■ Professors

- Ki-Wan An, Ph.D.  
[Professor, Forest Policy,  
kiwan@jnu.ac.kr, 062-530-2085]  
Conservation Engineering,  
ysahn@jnu.ac.kr, 062-530-2081]
- Kye-Han Lee, Ph.D.  
[Professor, Forest Ecology,  
khl@jnu.ac.kr, 062-530-2087]  
• Mi-Young Noh, Ph.D.  
[Assistant professor, Forest Protection,  
annemi@jnu.ac.kr, 062-530-2083]
- Young-Sang Ahn, Ph.D.  
[Associate professor, Forest Environment  
• Hyun-Jun Kim, Ph.D.  
[Assistant professor, Silviculture,  
hjkim0837@jnu.ac.kr, 062-530-2082]

### ■ Degree Requirements

Students are required to earn 130 credits with a minimum grade point average of 1.75 (out of a scale of 4.5). Students must also enroll for 4 years and pass a comprehensive exam.

### ■ What Do You Study?

#### ■ Core Courses

Introduction to Forestry (2)  
Dendrology (3)  
Silviculture 1 and Practice (3)

Dendrology Practice (2)  
Forest Management (3)  
Forest Protection (3)

## ■ Electives

- Seminar in Elementary Forestry (1)
- Surveying and Practice (3)
- Principles and Practices for Farming Settlements 1 (3)
- Principles and Practices for Farming Settlements 2 (3)
- Economic Plants in Forests (3)
- Practice in Forest Entomology (1)
- Forest Entomology (3)
- Forest Measurement and Practice (3)
- Forest Recreation Resource Management (3)
- Forest Hydrology & Practice (3)
- Mushroom Cultivation and Practice (3)
- Forest Breeding and Tree Improvement (3)
- Field Trip to College Forest (Silviculture) (1)
- Silviculture 2 and Practice (3)
- Nature Interpretation and Practice (3)
- Forest Management Practice (2)
- Forest Ecology and Practice (3)
- Forest Soil Science (3)
- Range and Wildlife Management (3)
- Forest Machinery and Practice (3)
- Forest Civil Engineering and Practice (3)
- Engineering of Forest Environment Conservation and Practice (3)
- Forest Policy and Practice (3)
- Proposal Construction for Farming Settlements (1)
- Forest Pathology (3)
- Urban Forestry (3)
- Forest Resources Capstone Design 1 (3)
- Forest Resources Capstone Design 2 (3)
- Forest Resources Field Practice 1 (2)
- Forest Resources Field Practice 2 (2)
- Practice in Forest Entomology (1)
- Tree Physiology (3)
- Forest CAD (3)
- Geographic Information System in Forests (3)
- Forest Laws and Practice (3)
- Forest Recreation Research Methods and Practice (3)
- Field Practice 2 (18)

## ■ Careers

Graduates may find work in the Korean Forestry Service, Korea National Arboretum, or National Plant Quarantine Service. They can also work in many other public organizations such as the Korea Highway Corporation, Korea National Park Service, the National Forestry Cooperatives Federation, and mushroom production companies.

Graduates who earn certificates in forest management or forest seeding may work in private nurseries and work as private forestry technicians.

## *Department of Wood Science and Engineering*

### *—Contact Information*

Phone: +82-62-530-2090

Fax: +82-62-530-2099

URL: <http://wood.jnu.ac.kr>

## ■ Major in Wood Science and Engineering

After the UN Rio Environmental Summit in 1992, international interest in woody biomass-produced forests has grown due to their important roles in environmental conservation and bioenergy. The undergraduate program in Wood Science and Engineering is dedicated to extending wood resources to meet the growing needs of society through research on manufacturing and processing of wood-based materials which are indispensable to enhancing the quality of human life.

The program offers a wide variety of challenging career tracks: wood anatomy, wood physics, wood processing, wood improvement for design and construction of wood-framing structures, bioenergy, wood biotechnology, and wood chemistry. More specific wood chemical/biological processing programs also address the question of harnessing the environment for fiber and energy production in the near future.

## ■ Professors

- Hyoung-Woo Lee, Ph.D.  
[Wood Processing and Machineries,  
[hwlee@jnu.ac.kr](mailto:hwlee@jnu.ac.kr)]
- Jae-Won Lee, Ph.D.  
[Wood Chemistry, Bioenergy,  
[ljwt43376@jnu.ac.kr](mailto:ljwt43376@jnu.ac.kr)]
- Gi-Young Jeong, Ph.D.  
[Wood Engineering,  
[gjeong1@jnu.ac.kr](mailto:gjeong1@jnu.ac.kr)]
- Jongsik Kim, Ph.D.  
[Wood Anatomy and Preservation,  
[jongsik.kim@jnu.ac.kr](mailto:jongsik.kim@jnu.ac.kr)]

## ■ Degree Requirements

Students are required to earn 130 credits, normally over a period of 8 semesters, in accordance with university regulations.

## ■ What Do You Study?

### ■ Core Courses

Introduction to Wood Science & Engineering (2)

### ■ Electives

Wood Anatomy & Lab. (2)

Applied Mathematics in Forest Products (3)

Furniture Manufacturing and Lab. (3)

Practice of Wooden Furniture Design and Drafting (3)

Wood Physics & Lab (3)

Wood Mechanics (3)

Wood Chemistry and Lab. (3)

Bioenergy (3)

Materials for Ecological Building Construction (3)

Plant Biopolymer (3)	Renewable wood materials and wood construction (3)
Drying Technology in Forest Products Industry (3)	Pulp & Paper Technology (2)
Unit Operations in Forest Products Industry (3)	Theory of Engineering Wood (2)
Wood Improving and Lab. (3)	Wood Preservation and Lab. (3)
Climate Change and Living Environment (2)	Extractives in Wood (3)
Design of Wood Frame Construction & Buildings (3)	Lignocellulosic biorefinery (3)
Logging Operations (3)	Operations Management in Forest Products Industry (3)
Instrumental Analysis of Lignocellulose (3)	Machinery in Forest Products Industry (3)
Wood based composite analysis (3)	Subject of wood science & engineering (2)
Plant and Wood Biotechnology (3)	Data writing in wood science area (3)
Field experience in wood science area (3)	Forest Products (3)
Forest Microbiology and Lab. (3)	Capstone design(3)

## ■ Careers

Students may pursue various careers in wood- processing industries including lumbering, plywood, and furniture manufacturing and production.

Other industries include particle boards and fiber boards, pulp and paper, and the bio-fuel production industry.

## Department of Agricultural and Biological Chemistry

### — *Contact Information*

Phone: +82-62-530-2130

Fax: +82-62-530-2139

E-mail: [woojung@jnu.ac.kr](mailto:woojung@jnu.ac.kr)

URL: <http://agrochem.jnu.ac.kr/>

## ■ What is Agricultural and Biological Chemistry?

Agricultural and Biological chemistry covers the understanding and application of biology and chemistry to agricultural systems for the purpose of benefitting agricultural production.

The main objective of Agricultural and biological chemistry is to provide students with the combined knowledge of plant nutrition and physiology, biochemistry, molecular biology, natural chemistry, soil science, microbiology, and environmental pesticide science for pursuing studies and careers related to agricultural environment and life sciences.

Agricultural and Biological chemistry contains as its main subjects fertilizer science, plant nutritional science, biochemistry, molecular biology, analytical chemistry, natural chemistry, organic chemistry, soil science, soil microbiology, pesticide science, general chemistry, biology, environmental chemistry, and their related laboratories and practical experiments.

## ■ Professors

- Kil-Yong Kim, Ph.D.  
[Professor, Soil Microbiology,  
[kimkil@jnu.ac.kr](mailto:kimkil@jnu.ac.kr)]
- In Seon Kim, Ph.D.  
[Professor, Environmental Pesticide Science,  
[mindzero@jnu.ac.kr](mailto:mindzero@jnu.ac.kr)]
- Hyang Bum Lee, Ph.D.  
[Professor, Environmental Microbiology,  
[hblee@jnu.ac.kr](mailto:hblee@jnu.ac.kr)]
- Woo Jin Jung, Ph.D.  
[Professor, Plant Resources Science,  
[woojung@jnu.ac.kr](mailto:woojung@jnu.ac.kr)]
- Jin-Cheol Kim, Ph.D.  
[Professor, Plant Growth Regulators Science,  
[kjinc@jnu.ac.kr](mailto:kjinc@jnu.ac.kr)]
- Yeonjong Koo, Ph.D.  
[Associate Professor, Biofertilizer,  
[yeonjong@jnu.ac.kr](mailto:yeonjong@jnu.ac.kr)]
- Eun Hea Jho, Ph.D.  
[Associate Professor, Agricultural Environment,  
[ejho001@jnu.ac.kr](mailto:ejho001@jnu.ac.kr)]

## ■ Degree Requirements

Students are required to earn 130 credits including 27 credits from core courses.

## ■ What Do You Study?

### ■ Core Courses

General Chemistry I (3)

General Chemistry II (3)

General Biology I (3)

General Biology II (3)  
Quantitative Analysis (3)  
Organic Chemistry (3)  
Soil Science (3)  
Pesticide Science (3)  
Biochemistry 2 (3)

#### ■ Electives

Agricultural and Biological Chemistry (3)  
Agricultural Radio Chemistry (3)  
Agriculture Inspection Science (3)  
Agro-Environmental Chemistry and Toxicology (3)  
Biochemistry 1 (3)  
Biocontrol Science (3)  
Biological and Environmental Chemistry (3)  
Biological Chemistry research (2)  
Biological Control Science (3)  
Bioremediation (3)  
Biostatistics (3)  
Chemistry of Natural Products (3)  
Crop Science (3)  
Environmental Assessment Theory (3)  
Environmental Chemistry for Agriculture (3)  
Environmental Ecology (3)

Environmental Safety and Assessment (3)  
Environmental Toxicology (3)  
Exercise in Agricultural Chemistry (3)  
Fertilizers (3)  
General Microbiology (3)  
Insect Pests of Plant (3)  
Introduction in Instrumental Analysis (3)  
Introduction to Biotechnology (3)  
Introduction to environmentally-friendly agriculture(3)  
Lab Work of Applied Chemistry (2)  
Lab Work of Fundamental Chemistry (2)  
Microbial & Biological Chemistry experiment (2)  
Molecular Biology (3)  
Mycology (3)  
Organic Chemistry 2 (3)  
Pesticide Toxicology (3)  
Plant Nutrition (3)  
Plant Pathology (3)  
Plant Resources Science (3)  
Principles and Practice for Farming Settlement 1 (3)  
Principles and Practice for Farming Settlement 2 (3)  
Principles of Crop Production (3)  
Proposal Construction for farming Settlement (1)  
Soil Microbiology (3)

#### ■ Careers

Graduates are able to find meaningful employment in agricultural companies related to pesticides and fertilizers, academic schools and institutes related to environmental and biological research, national institutes related to agricultural areas, industrial companies related to pharmaceutical areas, and national institutes related to analytical and toxicological areas.

## ■ What is Food Science and Technology?

Food Science and Technology emphasizes food technological issues related to human health and the food industry. The program trains students as food scientists or technologists armed with chemical, microbiological, biological fundamentals as well as engineering methodology for a comprehensive understanding of the physicochemical properties of food, processing and preservation of food materials and other biotechnological applications.

## ■ Professors

- Jong-Bang Eun, Ph.D.  
[Professor, Food Processing and Preservation, jbeun@jnu.ac.kr]
- Jae-Hak Moon, Ph.D.  
[Professor, Nutrition and Functional Chemistry, nutrmoon@jnu.ac.kr]
- Du-Woon Kim, Ph.D.  
[Professor, Food Microbiology and Food Biochemistry, dwkim@jnu.ac.kr]
- Young-Min Kim, Ph.D.  
[Associate Professor, Food Engineering and Enzyme Engineering, u9897854@jnu.ac.kr]
- Jeong-Yong Cho, Ph.D.  
[Associate Professor, Food and Natural Product Chemistry, jyongcho17@jnu.ac.kr]
- Soo-Jung Kim, Ph.D.  
[Associate Professor, Food System Engineering, bioks@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits including 17 credits from core courses.

## ■ What Do You Study?

### ■ Core Courses

Food Analysis and Lab 1 (1)  
Food Chemistry (3)  
Food Engineering (3)  
Nutrition Chemistry (3)  
Food Fermentation Engineering (3)  
Food Microbiology and Lab (3)  
Food Processing (3)

### ■ Electives

Introduction to Food Biotechnology (3)  
Introduction to Food Science (3)  
General Microbiology (3)  
Basic Food Biochemistry (3)  
English for Food Technology (3)  
Understanding managerial activities of food engineering and career research (1)  
Organic Chemistry 1 (3)  
Food Analysis and Lab 2 (1)  
Statistics for food science (3)

Organic Chemistry 2 (3)  
Food Processing and Engineering Lab. (2)  
Natural Products Utilization (3)  
Food Hygiene (3)  
Food Enzyme Technology (3)  
Food and Bio Venture Design & Practice (3)  
Food Biotechnology (3)  
Food Packaging (3)  
Food Quality Control (3)  
Food Chemistry (3)  
Applied Food Biochemistry (3)  
Industrial Microbiology (3)  
Marine Food Processing (3)  
Food Technology Research 1 (1)  
Food Science and Technology Capstone Design Practice (3)  
Sensory Evaluation of Foods (3)

Food Toxicology (3)  
Food Design Engineering (3)  
Applied Biotechnology (3)  
Food Technology Research 2 (1)  
Seminar for Food Professional Development (1)  
Food Instrumental Analysis (3)  
Food Sanitation Act (3)  
Food Oils and Fats (3)

#### ■ Teaching Profession Courses

Theories of Agricultural Education(3)  
Research of Agriculture Teaching Materials & Teaching Method(3)  
Logic and Essay Writing in Agricultural (2)

#### ■ Minor Courses

24 credits must be chosen.

### ■ Careers

Graduates of the Food Science and Technology Department become food scientists at food companies, the FDA, RDA, Agricultural Research & Extension Service, and the Research Institute related with Food and Biotechnology. They also become government officers related with hygienists, and processors(R&D, Quality Control, Production, Marketing).

## Department of Molecular Biotechnology

### —Contact Information

Phone: +82-62-530-2160

Fax: +82-62-530-2169

E-mail: westlife-jeong@jnu.ac.kr

URL: <http://mimb.jnu.ac.kr/>

### ■ What is Molecular Biotechnology?

A broad term of biotechnology is generally used to describe the use of biology in industrial processes such as agriculture, brewing, and drug development. The term also refers to the production of genetically modified organisms(GMOs) or the manufacture of products from genetically modified organisms. It involves the use of plants, animals, and micro-organisms to create products or processes. Traditional applications include animal breeding, brewing beer with yeast, and cheese making with bacteria. Recent developments include the use of enzymes or bacteria in a wide range of applications, including waste management, industrial production, food production and remediation of contaminated land. Modern biotechnology, molecular biotechnology, also includes the use of gene technology, which allows us to move genetic material from one species to another. Biotechnology combines disciplines like genetics, molecular biology, biochemistry, embryology, and cell biology.

### ■ Department of Molecular Biotechnology

Molecular Biotechnology focuses on the study of regulation and function of genes at the levels of DNA, RNA, and protein in living organisms.

Biotechnology aims to expand its usefulness by identifying and cloning new genes and traits, developing new diagnostic tests, and continuing to use these tools to better understand plants, animals, and microorganisms that make up the world.

### ■ Professors

- Oksoo Han, Ph.D.  
[Professor, Biochemistry,  
oshan@jnu.ac.kr]
- Kyoungwhan Back, Ph.D.  
[Professor, Plant Genetic Engineering,  
kback@jnu.ac.kr]
- Jeong-Il Kim, Ph.D.  
[Professor, Protein Biochemistry,  
kimji@jnu.ac.kr]
- Suk-Whan Hong, Ph.D.  
[Professor, Molecular Genetics and Breeding,  
sukwhan@jnu.ac.kr]
- Jun Ho Lee, ph.D.  
[Associate Professor, Neuro Biotechnology,  
leejunho@jnu.ac.kr]
- Don-Kyu Kim, ph.D.  
[Associate Professor, Molecular Endocrinology,  
dkkim2@jnu.ac.kr]
- Hyunkyu Sang, Ph.D.  
[Assistant Professor, Molecular Microbiology,  
hksang@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits including 12 credits from core courses.

## ■ What Do You Study?

### ■ Core Courses

Molecular Biology 1  
Biochemistry 2  
Animal Genetic Engineering  
Plant Genetic Engineering

### ■ Electives

Genetic Engineering and Human Life  
Organic Chemistry 1  
Organic Chemistry 2  
Molecular Biology 2  
Biochemistry 1  
Biochemistry 3  
Cell Biology 1  
Cell Biology 2  
Biostatistics  
Animal Physiology  
Analytical Chemistry

Analytical Chemistry Lab  
General Microbiology  
Genetics  
Molecular Genetics  
Developmental Biology  
Molecular Cell Biology  
Plant Physiology  
Biotechnology Lab  
Molecular Breeding  
Crop Physiology  
Animal Cell Culture and Lab  
Immunology  
Virology  
Enzymology  
Recombinant DNA Lab  
Plant Tissue Culture  
Protein Engineering

## ■ Careers

Graduates of the Molecular Biotechnology Department obtain jobs at government research institutes (Korea Research Institute of Bioscience & Biotechnology, KIST, Korea Research Institute of Chemical Technology), National Research Institute, Rural Development Administration, Korea Food Research Institute, companies related to biotechnology, pharmaceutical companies, Bio-venture companies, and at the School of Dentistry/Medicine/Pharmacy, patent attorneys, government officials (Korea Food & Drug Administration, local extension workers, researchers), Graduate school, Studying abroad.

## Division of Animal Science

### *Contact Information*

Phone: 82-62-530-2120

Fax: 82-62-530-2129

E-mail: A0049@jnu.ac.kr

URL: <http://animalscience.jnu.ac.kr/>

### ■ What is Animal Science?

The division of Animal Science (DAS) was founded in 1995 by merging the Department of Animal Science (founded in 1969) and the Department of Dairy Science (founded in 1973). Our division has made major contributions to research and supporting farmers in the meat, dairy, and feed industries.

### ■ Division of Animal Science

#### Our educational goals:

- 1) To provide high quality education and training for undergraduate and graduate students to serve internationally competitive and sustainable animal agriculture;
- 2) To provide new knowledge through basic and applied research in selected areas to improve efficiency in the production and quality of animal products.

The Division operates two research units (pet and special animals and small-to-large sized animals) and three information centers (119, SOS, and Sustainable Animal Research Center) to support research and teaching. This major offers various options so that students can select numerous areas to help them pursue a variety of employment opportunities.

### ■ Professors

#### • Division of Animal Science

- Major in Animal Bioresource
  - Sun, Sangsoo, Ph.D.  
[Animal Physiology, sssun@jnu.ac.kr]
  - Chin, Koobok, Ph.D.  
[Meat Science, kbchin@jnu.ac.kr]
  - Lee, Jiwoong, Ph.D.  
[Animal Breeding and Genetics, jwlee@jnu.ac.kr]
  - Kim, Minseok, Ph.D.  
[Animal Nutrition, mkim2276@jnu.ac.kr]
  - Yun Jinhyeon, Ph.D.  
[Pig production, pilot9939@jnu.ac.kr]
- Major in Animal Biotechnology
  - Kim, Taehwan, Ph.D.  
[Forage Physiology & Biochemistry, grassl@jnu.ac.kr]
  - Kang, Manjong, Ph.D.  
[Transgenic Animals, mj kang@jnu.ac.kr]
  - Oh, Sejong, Ph.D.  
[Animal Microbial Technology, soh@jnu.ac.kr]
  - Jeon, Teail, Ph.D.  
[Animal Metabolomics, tjeon@jnu.ac.kr]
  - Kim, Sunghak, Ph.D.  
[Molecular biochemistry, sunghakkim@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits to graduate.

## ■ What Do You Study?

- **Division of Animal Science**

Animal Life Science (1)

Introduction to Animal Resources Science (1)

Pet Animal Science (1)

- **Major in Animal Bioresource**

Reproductive Physiology and Lab. (2)

Animal Feeding and Lab. (2)

Animal Nutrition & Lab. (2)

Livestock Farm Practice (2)

Animal Physiology & Lab (2).

Animal Biochemistry and Lab. (2)

Meat Processing and Lab. (3)

Animal Breeding Principles and Lab. (3)

- **Major in Animal Biotechnology**

Forage Production and Utilization and Lab. (2)

Animal Cell Biology and Lab. (2)

Animal Biochemistry and Lab1 (2)

Animal Biochemistry and Lab 2 (2)

Dairy Food Processing and Lab. (3)

## Department of Rural and Biosystems Engineering

### *— Contact Information*

Phone: +82-62-530-2150

Fax: +82-62-530-2159

E-mail: [rbe-2150@jnu.ac.kr](mailto:rbe-2150@jnu.ac.kr)

URL: <http://rbe.jnu.ac.kr>

### ■ What is Rural and Bio-Systems Engineering?

The Department of Rural and Bio-systems Engineering, aim to build a climate-intelligent regional system that integrates regional infrastructure (design and construction), water environment (water management and non-point pollution control), and soil environment (soil quality management and carbon sequestration), atmospheric environment (fine dust and air pollution management), and policy/planning for sustainable agriculture to realize climate-smart agriculture. After graduating from the department, graduates can play a pivotal role in national and societies by taking jobs in national and regional government, public corporation (e.g., Korean Rural Community Corporation and K-Water), and research institute (e.g., National Institute of Agricultural Science, National Institute of Crop Science, National Institute of Animal Science, Rural Research Institute, and National Institute of Environmental Research).

### ■ Department of Rural and Bio-Systems Engineering

The Department of Rural and Bio-Systems Engineering pursues global competitiveness in agriculture and the sustainable development of rural communities through the application of integrated knowledge on engineering, natural science, and humanities and social sciences to agricultural and rural systems. The principal contents of research and education of the department are rural amenities, soil and water management, construction and management of infrastructure. Through research and education, the department serves industries and societies and achieves its reputation as a leader in the Rural and Bio-Systems engineering sector.

The Department develops graduates who can pursue engineering careers in industry, academia, consulting, or government. The curriculum is designed to educate the students to:

- possess engineering knowledge and skills on rural amenities and planning, environmental management, water resource conservation, soil remediation and management, and construction and management of rural infrastructure;
- be able to become successfully employed in engineering jobs in industry, government, or academia;
- educate graduates who continue to be engaged in professional development.

Students learn to apply fundamental knowledge of biological and physical sciences, mathematics, and engineering principles to formulate and solve engineering problems. Engineering design is integrated throughout the curriculum, along with opportunities to develop communication, learning, and teamwork skills, culminating in a capstone design experience. Electives in the curriculum allow students to specialize in:

- Rural Planning and Construction: Overall design, planning, and construction of rural systems for conservation and development of rural environments and communities.
- Environmental and Natural Resources Engineering: Development of water and soil resources management technologies for sustainable development of rural and agricultural systems.

Students select courses with the assistance of faculty advisors on an individual basis. Faculty members also assist with professional development and job placement for students.

## ■ Professors

### ■ Rural System Engineering Major

- Kwang-Sik Yoon, Ph.D.  
[Professor, Rural Environmental Water, ksyoon@jnu.ac.kr]
- Woo-Jung Choi, Ph.D.  
[Professor, Environmental Soil Science, wjchoi@jnu.ac.kr]
- Won-Jin Baek, Ph.D.  
[Professor, Rural Infrastructure Engineering, bwj215@jnu.ac.kr]
- Seung-Hwan Yoo, Ph.D.  
[Associate Professor, Rural Water Resources Engineering, yoosh15@jnu.ac.kr]
- Se-Woon Hong, Ph.D.  
[Assistant Professor, Ag. Facilities and Environment, hsewoon@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits, with 15 credits from core courses.

## ■ What Do You Study?

### Rural Systems Engineering Major Courses

#### ■ Core Courses

Spatial Information Analysis and Practice (3)  
Applied Mechanics of Structures (3)  
Irrigation & Drainage Engineering (3)  
Agricultural Environment and Ecology (3)  
Soil Mechanics and Practice II (3)

#### ■ Electives

CAD (3)  
Engineering Mathematics (3)  
Fluid Mechanics (3)  
Applied Analytical Chemistry (3)  
Applied Calculus (3)  
Statics (3)  
Rural System Seminar on Industrial Topics (3)  
Surveying and Practice (3)

Construction Materials (3)  
Hydraulics (3)  
Applied Surveying and Practice (3)  
Mechanics of Materials (3)  
English for Rural Systems Engineer (3)  
Environmental Soil Science (3)  
Reinforced Concrete 1 (3)  
Soil Mechanics and Practice 1 (3)  
Green Engineering Hydrology (3)  
Environmental Pollution Analysis Lab (3)  
Construction Methods and Equipments (3)  
Rural Land Use Planning (3)  
Rural Environmental Engineering (3)  
Onsite Water Treatment Engineering (3)  
Reinforced Concrete 2 (3)  
Land Remediation and Reclamation (3)

Foundation Engineering (3)  
Statistical analysis of Climate-Smart Information (3)  
Rural Planning (3)  
Rural Tourism (3)  
Rural Infrastructure Design (3)  
Capstone Design for Rural System Engineers 1 (3)

Climate-Smart Disasters Prevention Engineering (3)  
Farm Structures (3)  
Rural Road Engineering (3)  
Rural Settlement Planning (3)  
Capstone Design for Rural System Engineers 2 (3)

## ■ Careers

Graduates who obtain a broad engineering background through the Department's program are sought after by a wide variety of employers. The following is a list of current employers:

- Government Agencies
- Korea Rural Community Corporation
- National Institute of Agricultural Science
- Korea Water Resources Corporation
- Rural Research Institute
- Korea Electric Corporation
- Korea National Housing Corporation
- Korea Highway Corporation
- Korea Railroad
- Construction Companies
- National Institute of Crop Science
- National Institute of Environmental Research
- Korea Hydro and Nuclear Power Corporation
- Korea Gas Corporation
- Mechanical and Electrical Engineering-related Companies
- Food Production Companies
- Crop Storage and Handling Companies
- Agricultural Production Consultant Companies
- Korean Army and Police

## Department of Agricultural Economics

### —Contact Information

Phone: +82-62-530-2170

Fax: +82-62-530-2179

E-mail: [scsa13@jnu.ac.kr](mailto:scsa13@jnu.ac.kr)

URL: <http://ae.jnu.ac.kr/>

## ■ What is Agricultural Economics?

The purpose of the Agricultural Economics (AE) major is to enable students to think like economists in solving problems related to the agricultural sector. Thinking like an economist involves using chains of deductive reasoning to help understand phenomena as well as problem-solving and creative skills in the agricultural sector.

Our goals are to increase understanding of economic behavior and improve students' ability to understand and predict agricultural economic phenomena.

The main subjects of the Department of Agricultural Economics are agricultural economics, farm management, agricultural product price analysis, farm statistics, and resource and environmental economics.

## ■ Professors

- Gue-Dae Cho, Ph.D.  
[Professor, Agricultural Policy, Agricultural Product Trade, [gcho6011@jnu.ac.kr](mailto:gcho6011@jnu.ac.kr)]
- Hye-Jung Kang, Ph.D.  
[Professor, Farm Management, Production Economics, Food Consumption Economics, [hjkang@jnu.ac.kr](mailto:hjkang@jnu.ac.kr)]
- In-Seog Kim, Ph.D.  
[Professor, Agricultural Marketing and Agribusiness, [i.kim@jnu.ac.kr](mailto:i.kim@jnu.ac.kr)]
- Yoon-Hyung Kim, Ph.D.  
[Associate Professor, Benefit-cost Analysis, Agricultural Development, [yonhk@jnu.ac.kr](mailto:yonhk@jnu.ac.kr)]
- Hanpil Moon, Ph.D.  
[Associate Professor, Applied Econometrics, [hanpil@jnu.ac.kr](mailto:hanpil@jnu.ac.kr)]

## ■ Degree Requirements

Students are required to earn 130 credits, normally over a period of 4 years (8 semesters).

Students must also demonstrate proficiency in English and in using computers.

## ■ What Do You Study?

### ■ Core Courses

Agricultural Economics (3)  
Farm Management (3)  
Mathematics for Agricultural Economics (3)  
Agricultural Prices Theory (3)  
Agricultural Policy (3)

Resources and Environmental Economics (3)

### ■ Electives

Agricultural Prices Theory (3)  
Resources and Environmental Economics (3)  
Rural Sociology (3)  
Micro-analysis of Agricultural Economics (3)

Agricultural Accounting (3)  
Regional Agricultural Economics (3)  
Statistics for Agricultural Economist (3)  
Agricultural Production Economics (3)  
Study of Korean Economy (3)  
Agricultural Extension Service (3)  
Korean Agricultural History (3)  
Agricultural Math Economics (3)  
Agricultural Project Appraisal (3)  
Agricultural Product Trade (3)  
Agricultural Econometrics (3)

Agricultural Systems Analysis (3)  
Farm Finance (3)  
Rural Survey (3)  
Cooperatives (3)  
Farm Management Analysis (3)  
Agricultural Development (3)  
Practice in Economics (3)  
Agricultural Marketing (3)  
Agricultural Information (3)  
Macro-analysis of Agricultural Economics (3)  
Globalization and Food Security (3)

## ■ Careers

Possible careers extend to a multitude of organizations including the Rural Development Administration, Agricultural Research and Extension Services, government public institutions, research center, Agricultural Cooperative Association, Agricultural Technology Center, and other private sector firms.

It is also possible to enter graduate school or study abroad.

## Department of Landscape Architecture

### — *Contact Information*

Phone: +82-62-530-2100

Fax: +82-62-530-2109

E-mail: a4723@jnu.ac.kr

URL: <http://jnula.jnu.ac.kr/>

### ■ What is Landscape Architecture?

Landscape architecture is the art and science of arranging the spaces and objects upon land for the benefits of natural environment and human society. It involves the analysis, planning, design, construction, management, and stewardship of the natural and built environments. It includes the systematic study of large land areas based upon the ecological concern and visual quality. It deals with the location of buildings and the organization of the spaces between them. Projects cover parks and recreation, resorts, campuses, gardens, green roofs, interior landscapes, streetscapes, public spaces, urban design, and restoration of streams and wetlands.

### ■ Department of Landscape Architecture

The Department of Landscape Architecture offers three degree programs; Bachelor, Master and Doctor of Philosophy in Landscape Architecture. It emphasizes the art and techniques of creating landscapes with a concern for ecology, natural resources, and social services. The faculty specializes in design, planning, construction, management, representation, technology, history and theory. Students will have skills to investigate characteristics of the site, identify solutions and its usage. Our programs guide students to have ability to restore disturbed landscapes, create sustainable ecosystems, and develop suitable and communities. They are introduced to the various scales of practice from small scaled spaces such as gardens, small parks, and green streets to large scaled ones such as communal parks, resorts, stream corridors, wetlands, cities, and regional watersheds. The program also includes visual and digital media based on programs such as computer aided design, Photoshop, and geographic information system.

### ■ Professors

- Tong-Buhm Cho, Ph.D.  
[Professor, Landscape Design,  
tobcho@jnu.ac.kr]
- Eun-Il Kim, Ph.D.  
[Professor, Environmental Design,  
eikim@jnu.ac.kr]
- Ki-Yeol Lee, Ph.D.  
[Associate Professor, Landscape Engineering,  
kylee@jnu.ac.kr]
- Yoon-Ku Kwon, Ph.D.  
[Assistant Professor,  
Landscape and Regional Planning,  
ykkwon@jnu.ac.kr]
- Sang-Wook Park, Ph.D.  
[Assistant Professor, Landscape Planting Design,  
psw04@jnu.ac.kr]

## ■ Degree Requirements (Bachelor)

Students are required to earn 130 credits, normally over a period of 8 semesters, in accordance with university regulations.

## ■ What Do You Study in undergraduate?

### ■ Core Courses

Landscape Planning Design and Practice (3)  
Practice and Field Trip for Landscape Plants (3)  
Landscape Architectural Design 1 (3)  
Garden Design (3)  
Graduation Design Studio (Capstone Design) (3)

### ■ Electives

Tourism and Recreation Planning (3)  
Perspective Techniques (3)  
Computer-Aided Landscape Planning and Design (3)  
Landscape Surveying and Practice (3)  
Landscape Design Media Studio 2 (3)  
Principles of Landscape Planning (3)  
Landscape Architectural Construction Materials (3)  
History and Field Trip of western Landscape Architecture(3)  
Landscape ecology (3)  
Indoor Landscape and Practice (3)  
History and Field Trip of Oriental Landscape Architecture(3)  
landscape shaping Practice (3)  
Landscape Structural Mechanics and Practice (3)  
GIS and Urban Spatial Analysis (3)  
Ecological survey and analysis (3)  
Understanding of Landscape Architectural Profession(3)  
Landscape Architecture Field Practice 1 (2)  
Environmental Openspace Design (3)  
Landscape Architecture Construction (3)

Case Study on Contemporary Landscape Project (3)  
Landscape Maintenance and Practice 1 (3)  
Ecological restoration planning (3)  
Landscape Architectural Design 2 (4)  
Park Planning and Design Studio (3)  
Urban Woodlands Planning (3)  
Cost Estimate in Landscape Architecture (3)  
Space Composition of traditional landscape architecture(3)  
Site Design and Practice (3)  
Climate change informatics (3)  
Landscape Aesthetics & Design Issues (3)  
landscape assessment (3)  
Cultural Property and Practice (3)  
Theory of Urban and Regional Planning (3)  
Landscape Facilities Structural Design (3)  
Landscape Maintenance and Practice 2 (3)  
Environmental Impact Assessment (3)  
Landscape Architecture Seminar on Industrial Topics (3)  
Park management (3)  
Environmental Ecological Climate Plan (3)

### ■ Teaching Profession Courses

Research of Educational Text and Teaching (3)  
Method of Plant Resources and Landscape Architecture (3)  
Educational Theories in Plant Resources and Landscape Architecture (3)

## ■ Careers

Graduates may seek employment in the Ministry of Construction and Transportation, Ministry of Environment, Ministry of Government Administration and Home Affairs, local governments, Korea National Housing Corporation, Korea Land Corporation, Urban Development Corporation, Korea Highway Corporation, and private enterprises for landscape planning, design, construction, and management.

## Department of Bioenergy Science and Technology

### — *Contact Information*

Phone: +82-62-530-2043

Fax: +82-62-530-2047

E-mail: A4705@jnu.ac.kr

URL: <http://bioenergy.jnu.ac.kr/>

### ■ What is Bioenergy Science and Technology?

Global demand for energy has tremendously increased due to the accelerated growth of the human population and the improvement of human life. Although natural gas and atomic energy have been utilized to supply a portion of the energy demand, petroleum resources will become depleted within this century. In addition, the increased consumption of fossil fuels will steadily increase emissions of carbon dioxide, augmenting greenhouse gases in the atmosphere. Thus, energy and the environment are inextricably linked. Reducing dependence on fossil fuels and imported oil is a challenge of vital importance to national security, the economy, and the environment. Bioenergy, based on biomass, has drawn attention as a sustainable energy source that may help cope with the rising prices of fossil fuels, and address environmental concerns about greenhouse gas emissions. Bioenergy science and technology is about basic biological and biochemical science on plant biomass and enabling technology, not only for the improvement of the yield and quality of cellulosic biofuels and biodiesels, but also for the production of biofuels.

### ■ Department of Bioenergy Science and Technology

The Department of Bioenergy Science and Technology was newly established in 2010 and selected as part of the World Class University (WCU) system by the Ministry of Education, Science and Technology until 2013. We will establish a pioneering education system for expanding learning opportunities from various academic backgrounds, such as plant biology, molecular biology, chemistry, biochemistry, biotechnology, biochemical engineering, and bioprocess engineering. This innovative education system is intended to accelerate basic research in the development of sustainable bioenergy, including cellulosic ethanol and other biofuels. The final aim of this new department is to provide experts with scientific and technological knowledge that will afford economic and social benefits to agriculture and the environment and, thus, improve the quality of life.

### ■ Professors

- Kim, Jungmook, Ph.D.  
[Plant Molecular Cell Biology,  
[jungmkim@jnu.ac.kr](mailto:jungmkim@jnu.ac.kr)]
- Bae, Hyeun-Jong, Ph.D.  
[Bioenergy & Biotechnology,  
[baehj@jnu.ac.kr](mailto:baehj@jnu.ac.kr)]
- Ahn, Sung-Ju, Ph.D.  
[Energy Crop Physiology,  
[asjsuse@jnu.ac.kr](mailto:asjsuse@jnu.ac.kr)]
- Lee, Won-Heong, Ph.D.  
[Microbial Engineering,  
[wonhlee@jnu.ac.kr](mailto:wonhlee@jnu.ac.kr)]

• Cho, Chul-Woong, Ph.D.  
[Environmental Chemical Engineering,  
choicejoe@jnu.ac.kr]

• Lee, Dong Wook, Ph.D.  
[Plant Cellular Systems Biology,  
ldw4844@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits, normally over a period of 4 years (8 semesters).

## ■ What Do You Study?

### ■ General Courses

General Biology 1 (3 credits)  
Mathematics 1 (3)  
General Chemistry 1 (3)  
Career Plan and Self Understanding (2)  
General Chemistry 2 (3)

### ■ Core Courses

Biochemistry 1 (3)  
Bioenergy (3)  
Plant Physiology 1 (3)  
Industrial Microbiology (3)  
Biochemical Engineering (3)

### ■ Electives

Introduction to Bioenergy Science and  
Technology (3)  
General Plant Biology & Lab (3)  
Campus Life and Career Roadmap (2)  
Molecular Biology 1 (3)  
Cell Biology1 (3)  
Organic Chemistry 1 (3)  
Molecular Biology 2 (3)  
Biochemistry 2 (3)  
Physical Chemistry (3)

Organic Chemistry 2 (3)  
Genetics (3)  
Cell Biology 2 (3)  
Plant Ecology and Environment (3)  
Bio-Nano Technology (3)  
Bioinformatics (3)  
Principles and Methods of Gene Manipulation (3)  
Plant Molecular Biotechnology (3)  
Bioenergy Engineering Capstone Design 1 (3)  
Biostatistics (3)  
Bioprocess Engineering (3)  
Quantitative Analysis (3)  
Enzymology (3)  
Plant Physiology 2 (3)  
Environment and microbiology (3)  
Bioenergy Engineering Capstone Design 2 (3)  
Current Biomass Science (3)  
Plant Seed Science (3)  
What are Bioactive materials (3)  
Microbial Engineering (3)  
Fermentation Technology (3)  
Microbial metabolic regulation engineering (3)  
Crop physiology (3)

## ■ Careers

Bioenergy Science and Technology job opportunities include: biofuel or bioengineering or energy-related corporations, professors or researchers in plant biology, biology, or bioengineering, rural development administration staff, National Institute of Agricultural Biotechnology, Korea Research Institute of Bioscience and Biotechnology, agricultural research and extension services staff, Ministry of Agriculture and Forestry staff, National Plant Quarantine staff, Agricultural Cooperative Association staff, Agricultural Technology Center staff, the private sector (biotechnology and bioengineering or related) staff, etc.

## ■ What is Convergence Biosystems Engineering?

The Department of Convergence Biosystems Engineering deals with mechanical, artificial intelligence, electricity, electronics, robots, materials, and bioengineering for biological systems such as plants, animals, and humans. In other words, it deals with knowledge necessary for unmanned and intelligent production of biological resources, advanced biomaterialization, and digital informatization, and fosters convergent professional talents with both agricultural and life sciences and engineering knowledge. Through this, we aim to contribute to the development of the future agricultural and bio industries.

## ■ Department of Convergence Biosystems Engineering

The Department of Convergence Biosystems Engineering conducts education and research on advanced biosystems that combine engineering technologies such as machinery, electrical/electronic, computer and information and communication. Key research areas include intelligent agricultural machinery, smart farms and plant factories, robots and artificial intelligence, biomaterials and nanobioengineering, and biofabrication, and are gradually expanding to bio, food, energy, environment, and healthcare.

Students learn to apply fundamental knowledge of biological and physical sciences, mathematics, and engineering principles to formulate and solve engineering problems. Engineering design is integrated throughout the curriculum, along with opportunities to develop communication, learning, and teamwork skills, culminating in a capstone design experience. Electives in the curriculum allow students to specialize in:

**Agricultural Machinery Development and Automation:** Development and automation of agricultural machines for crop planting, harvesting, and processing.

**Biological Engineering and Bionanotechnology:** Development of innovative bio-platforms for improving life of living systems.

Students select courses with the assistance of faculty advisors on an individual basis. Faculty members also assist with professional development and job placement for students.

## ■ Professors

- Young-Soo Choi, Ph.D.  
[Professor, [Biosystems](#) Machine Control, [y-choi@jnu.ac.kr](mailto:y-choi@jnu.ac.kr)]
- Kyeong-Hwan Lee, Ph.D.
- Hyoung Il Son, Ph.D.  
[Professor, Human-Centered Robotics]
- [Professor, Sensors and Intelligent Biosystems, [khlee@jnu.ac.kr](mailto:khlee@jnu.ac.kr)]

and Automation, hison@jnu.ac.kr]

- Jangho Kim, Ph.D.  
[Professor, Nanoengineered Biomaterial Systems,  
rain2000@jnu.ac.kr]
- Hee-Gyeong Yi, Ph.D.

[Assistant Professor, Bio-Manufacturing Systems,  
hgyi@jnu.ac.kr]

- JooSeon Oh, Ph.D.  
[Assistant Professor, Off-road mobility system,  
jooseon.oh@jnu.ac.kr]

## ■ Degree Requirements

Students are required to earn 130 credits, with 18 credits from core courses.

## ■ What Do You Study?

### ■ Core Courses

Electronic Circuit for Biosystems and Practice (3)  
Field Machinery and Practice (3)  
Biomechanics and Tissue Engineering and Practice (3)  
Biosystems Robotics (3)  
Environment Control in Biosystems Structures (3)  
Computer Aided Engineering Design (3)

### ■ Electives

CAD (3)  
Engineering Mathematics (3)  
Biology for Biosystems Engineering (3)  
Fundamental Science for Biosystems (3)  
Applied Calculus (3)  
Statics (3)  
Computer Programming (3)  
Manufacturing Processes (3)  
Dynamics (3)  
Biosystems Engineering Lab (3)  
Biosystem Mechatronics and Practice (3)  
Fluid Mechanics for Biosystems (3)  
Mechanics of Materials for Biological Applications (3)  
Biosystems Modeling and Practice (3)

Bio-Industrial Machine Design (3)  
Mechanics of Bio-Industrial Machine (3)  
Thermodynamics (3)  
Fluid Machinery (3)  
Precision Agricultural Engineering(3)  
Tractor Engineering and Practice (3)  
Design of Biosystems Engineering (3)  
Field Practice in Biosystems Engineering 1 (2)  
Introduction to computer engineering (3)  
Biosystem Measurements (3)  
Field Practice in Biosystems Engineering 2 (2)  
Seminar on Industrial Topics 1 (1)  
Biosystems Automation (3)  
Capstone Design of Biosystems I (3)  
Environmental Control in Agricultural Structures (3)  
Bio-Resource Process Engineering (3)  
Nanobioengineering (3)  
Seminar on Industrial Topics 2 (1)  
Capstone Design of Biosystems 2 (3)  
Sensors for Bio-industry (3)  
Hydraulics System Engineering (3)

## ■ Careers

Graduates who obtain a broad engineering background through the Department's program are sought after by a wide variety of employers. The following is a list of current employers:

- Government Agencies
- Korea Rural Community Corporation
- Korea Water Resources Corporation
- Rural Research Institute
- Korea Electric Corporation
- Korea National Housing Corporation

- Korea Highway Corporation
- Korea Railroad
- Construction Companies
- Agricultural Machinery Manufacturers
- Agricultural Machinery Research Institute
- Korea Hydro and Nuclear Power Corporation
- Korea Gas Corporation
- Mechanical and Electrical Engineering-related Companies
- Food Production Companies
- Crop Storage and Handling Companies
- Agricultural Production Consultant Companies
- Korean Army and Police