

BS Agricultural Biotechnology

The BS Agricultural Biotechnology (BS ABT) of the College of Agriculture and Food Science, University of the Philippines Los Baños, is a premier and pioneer undergraduate academic program in the Philippine higher education system.

Recognizing the role of biotechnology in food security and safety, the program allows students to acquire necessary knowledge, understanding, and skills essential in traditional and molecular biotechnology and their applications to improve agricultural production and maintain quality agro-ecosystems.

The BS ABT program is interdisciplinary in nature and integrates the strengths of the different Institutes of the College. Students have the option to pursue one of the four major fields of specialization:

- Animal Biotechnology
- Crop Biotechnology
- Crop Protection Biotechnology
- Food Biotechnology

The BS Agricultural Biotechnology program aims to produce graduates who:

1. Exhibit sufficient level of technical competency and or expertise, with social commitment, in science-based agricultural biotechnology and other;
2. Maintain values and global ethical perspective in the practice of their professions and other related disciplines;
3. Apply the acquired knowledge and develop skills in the application of biotechnology, genetic control and environmental manipulation technologies to improve agricultural production and maintain quality agro-ecosystems; and
4. Work independently and/or in multi-disciplinary, multi-cultural teams of related fields with minimal supervision.

CAREER PROSPECTS

Our graduates can join the academe, work in various government agencies involved in regulatory or research, work for private companies and laboratories, or engage in entrepreneurship.

PROGRAM LEARNING OUTCOMES

Common to all Programs

A. Articulate and discuss the latest developments in their

specific field of practice and engage in life-long learning (PQF level 6 descriptor)

B. Effectively communicate orally and in writing using both English and Filipino languages

C. Work effectively and independently in multi-disciplinary and multi-cultural teams (PQF level 6 descriptor)

D. Act in recognition of professional, social, and ethical responsibilities.

Demonstrate professional, social and ethical responsibility, especially in practicing intellectual property rights and sustainable development

E. Preserve and promote “Filipino historical and cultural heritage” (based on RA 7722)

Common to Agriculture Discipline

F. Generate and share knowledge in the study of agriculture;

G. Formulate and implement agricultural development plans and programs;

Common to the Science and Mathematics Discipline

H. Demonstrate broad and coherent knowledge and understanding in the core areas of physical and natural sciences;

I. Apply critical and problem-solving skills using the scientific method;

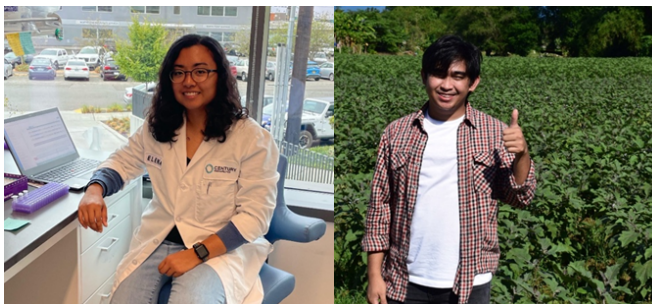
J. Interpret relevant scientific data and make judgements that include reflection on relevant scientific and ethical issues;

K. Carry out basis mathematical and statistical computations and use appropriate technologies in the analysis of data;

L. Communicate information, ideas, problems, and solutions, both orally and in writing, to other scientists, decision makers and the public;

M. Relate science and mathematics to other disciplines;

N. Design and perform safe and responsible techniques and procedures in laboratory and field practices;



O. Accept and critically evaluate input from others;

P. Appreciate the limitations and implications of science in everyday life;

Q. Commit to the integrity of data;

Specific to BS Agricultural Biotechnology

A. Demonstrate expertise in agricultural biotechnology having acquired knowledge and developed skills in the application of biotechnology, genetic control and environment manipulation technologies to improve agricultural production and maintain quality agro-environments;

B. Engage in teaching, research, extension, regulation, industry practice, and entrepreneurial professions having been trained in the new emerging scientific concepts;

C. Practice social responsibility with the finest degree of ethical discipline and science-based decisions; and Specific to the University of the Philippines

D. Lead with honor and excellence in public service and in fields of practice.

PROGRAM STRUCTURE

The BS ABT program is a 4-year course, with a regular total load of 142 course units. The courses in the BS ABT program are categorized as follows:

GE courses and a legislated course	27 units
Foundation courses	65 units
Major core courses	21 units
Specialization courses	12 units
Electives	6 units
Undergraduate Seminar	1 unit
Colloquium in Agriculture	1 unit
Practicum or Special Problem	3 units
Undergraduate Thesis or Major Practice	6 units

BS ABT Courses

ABT 10. Traditional and Modern Biotechnology: Principles and Applications* (1,2)

PR: None; 3 hours class; 3 units

Concepts and applications of biotechnology; issues and concerns; *Non-GE course taken by non-BS ABT students

ABT 11. Introduction to Agricultural Biotechnology (1,2)

PR: None; 1 hour class; 1 unit

Overview of agricultural biotechnology; implications of Philippine and global agriculture

ABT 101. Fundamentals of Agricultural Biotechnology (1,2)
PR: BIO 30 and CHEM 40; 3 hours class; 3 units
Principles and applications of agricultural biotechnology

ABT 103. Experimental Techniques in Agricultural Biotechnology I (1,2)
PR: ABT 101 or COI; 1 hour class, 6 hours lab; 3 units
Laboratory practices, tools and procedures in plant tissue culture, animal reproduction, food and crop protection biotechnology.

ABT 104. Experimental Techniques in Agricultural Biotechnology II (1,2)
PR: ABT 101 or COI; 1 hour class, 6 hours lab; 3 units
Laboratory tools and procedures in bioinformatics, protein isolation and purification, molecular marker technology and recombinant DNA technology.

ABT 106. Molecular Markers (1,2)
PR: ABT 101 or COI; 2 hours lec and 3 hours lab classes; 3 units; Principles and applications of molecular marker technologies in agriculture, medicine industry and environment.

ABT 107. Recombinant DNA Technology (1,2)
PR: ABT 101 or COI; 3 hours class; 3 units
Principles and applications of recombinant DNA technology.

ABT 108. Issues and Regulation of Agricultural Biotechnology (1,2)
PR: ABT 107 or COI; 3 hours class; 3 units
Technological and social issues and science-based assessment and regulation of agricultural biotechnology.

ABT/FST 115. Fundamentals of Food Biotechnology (1)
PR MCB 1 and CHEM 160; 3 units
Principles and applications of food biotechnology

ABT 120. Animal Biotechnology (2)
PR ABT 101 or COI; 3 hours class; 3 units
Fundamentals of animal biotechnology as applied to livestock and poultry production

ABT 140. Biotechnology in Crop Protection (2)
PR ABT 101 or COI; 3 hours class; 3 units
Principles and applications of biotechnology in the management of insect pests, plant diseases and weeds.

ABT 191. Special Topics (1,2)
1-3 hours class; 1-3 units; may be taken twice provided that the total number of units to be credited to the student's program will not exceed 4 units.

ABT 190. Special Problem
3 hours; 3 units; Offered: 1st and 2nd Semesters

ABT 198. Practicum
PR: Must have completed 12 units of major core courses and 3 units of specialization course; 150 hours; 3 units; Offered: 1st and 2nd Semesters, Midyear

ABT 199. Undergraduate Seminar
1 class hour; 1 unit; Offered: 1st and 2nd Semesters

ABT 200/200a. Undergraduate Thesis/Major Practice**
6 units; Offered: 1st and 2nd Semesters, Midyear
**Includes field practice, teaching, research internship and entrepreneurship options

Specialized Courses

ABT/FST 115, ABT 120, and ABT 140 are specialized courses. The student should take a total of 12 units specialization courses from the list below depending on their major field of specialization.

For Major in Animal Biotechnology

ANSC 101. Anatomy and Physiology of Farm Animals
ANSC 102. Principles of Animal Nutrition
ANSC 103. Principles of Animal Breeding

For Major in Crop Biotechnology

CRSC 105. Principles of Plant Breeding
AGR 150. Methods in Plant Breeding I
AGR 153. Methods in Plant Breeding II
AGR 160. Plant Genetic Resources Conservation and Management
AGR 170. Fundamentals of Seed Technology
AGRI 121. Ecological Agriculture
HORT 133. Plant Tissue Culture
HORT/BOT 132. Plant Growth
ASYS 145. Participatory Methodologies in Agricultural Systems Research
SOIL 120. Soil Microbiology

For Major in Crop Protection Biotechnology

PPTH 101. Principles of Plant Pathology
PPTH 102. Plant Disease Control
PPTH 103. Introductory to Phyto-bacteriology
PPTH 106. Principles of Phytonematology
PPTH 112. Control of Plant Pathogens

PPTH 115. Introductory Plant Virology
ENT 101. General Entomology
ENT 120. Insect Physiology
ENT/BIO 137. Insect Genetics
ENT 172. Biological Control of Insect Pests

For Major in Food Biotechnology

FST 122. Food Fermentation
FST 101. Food Biochemistry I
FST 111. Food Chemistry II
FST 167. Principles of Food Safety

Elective Courses

Of the 6 units requirement, the student should take one course or for total of 3 units from the list below. Course credit is 3 units except for PHYS and VMCB.

AAE 111. Farm Management
BIO 130a. Advanced Genetics I
BIO 130b. Advanced Genetics II
BOT 20. Elementary Plant Physiology
CHEM 162. Plant Biochemistry
MCB 102. General Virology
MCB 103. Medical Microbiology
MCB 160. Industrial Microbiology
MCB 180. Introductory Food Microbiology
MGT 151. Fundamentals of Marketing Management
PHYS 51. Elements of Physics (4 units)
PHYS 51.1 Elements of Physics Laboratory (1 unit)
VMCB 124. Fundamentals of Immunology (2 units)



BS AGRICULTURAL BIOTECHNOLOGY

Undergraduate Major Programs

