

# PROGRAM CURRICULUM

## 1. Doctor of Philosophy in Biology

**Table 1. Training program**

	<b>PhD students holding identical major of Bachelor's degree</b>	<b>PhD students holding identical major of Master's degree</b>	<b>PhD students holding similar major of Master's degree</b>
<b>Pre-additional modules</b>	30 credits under as required by program	-	-
<b>Additional modules</b>		-	10 credits
<b>PhD. modules</b>	8 credits (4 compulsory credits, 4 optional credits)		
<b>PhD. reports</b>	6 credits (3 subjects)		
<b>Literature reviews</b>	2 credits		
<b>Scientific research</b>	<ul style="list-style-type: none"> <li>- Conducting experiments and participate in all academic activities after receiving the decision to recognize PhD students until the completion dissertation defense;</li> <li>- Participating in at least one scientific seminar per year organized by the HUIB;</li> <li>- Publishing at least 02 articles related to the dissertation contents, including at least 01 article on international per-reviewed journals or 01 per-reviewed conference proceeding and 01 article on Hue University Journal of Sciences before having dissertation.</li> </ul>		
<b>PhD dissertation</b>	74 credits The PhD dissertation must be a creative and innovative scientific research, finding novel results, contributing to theory, achieving novel knowledge or solutions that are valuable in developing, improving scientific knowledge in the field of research or creatively solving problems as professional and social demands.		
<b>Total</b>	<b>120 credits</b>	<b>90 credits</b>	<b>100 credits</b>

**Table 2. PhD. modules (courses)**

No.	Course code		Courses	Credits
	Letter	Number		
<b>Part 1. Compulsory courses</b>				
1	HPTSSH	01	Molecular Genetics and Genomics	2
2	HPTSSH	02	Biodiversity Conservation	2
<b>Part 2. Optional courses (choose 2/9 courses)</b>				
3	HPTSSH	03	Marine Biology	2
4	HPTSSH	04	Molecular Evolution	2
5	HPTSSH	05	Environmental Ecology	2
6	HPTSSH	06	Applied Animal Physiology	2
7	HPTSSH	07	Applied Plant Physiology	2
8	HPTSSH	08	Applied Microbiology	2
9	HPTSSH	09	Genetics and Animal Breeding	2
10	HPTSSH	10	Applied Cell Technology	2
11	HPTSSH	11	Applied Bioinformatics	2

**2. Doctor of Philosophy in Organic agriculture****Table 1. Training program**

	Candidates holding Bachelor's degree identical majors	Candidates holding Master's degree in identical majors	Candidates holding Master's degree in similar majors
<b>Additional modules</b>	5 compulsory modules (26 credits) and 1 optional module (4 credits)	-	1 compulsory module (3 credits) and 2 optional modules (6 credits)
<b>PhD. modules</b>	1 compulsory module (4 credits) and 1 optional module (4 credits)		
<b>PhD. reports</b>	6 credits (2 PhD. reports)		
<b>Literature reviews</b>	2 credits		

<b>Scientific research</b>	<ul style="list-style-type: none"> <li>- Conducting experiments and participate in all academic activities after receiving the decision to recognize PhD. students until the completion dissertation defense;</li> <li>- Participating in at least one scientific seminar per year organized by the HUIB;</li> <li>- Publishing at least 02 articles related to the dissertation contents, 01 is on ISI-scopus journal list and 01 article on Hue University Journal of Sciences; or Publishing at least 02 articles related to the dissertation contents, on per-reviewed international conference proceeding (involve in <a href="https://dblp.uni-trier.de/">https://dblp.uni-trier.de/</a>) and 01 article on Hue University Journal of Sciences; or Publishing at least 02 articles related to the dissertation contents, on per-reviewed journals involve in DOAJ-Directoty of Open Access Journals or ACI-Asean citation index or COPE-Committee on publication ethics and 01 article on Hue University Journal of Sciences before having dissertation.</li> </ul>		
<b>PhD. dissertation</b>	74 credits The PhD. dissertation must be a creative and innovative scientific research, finding novel results, contributing to theory, achieving novel knowledge or solutions that are valuable in developing, improving scientific knowledge in the field of research or creatively solving problems as professional and social demands.		
<b>Total</b>	<b>120 credits</b>	<b>90 credits</b>	<b>99 credits</b>

**Table 2. PhD. modules (courses)**

No.	Name of Module	Courses	Code		Credits
			Letter	Number	
<b>Compulsory courses (4 credits)</b>					
1	Organic agricultural theory and practice	Organic agricultural theory	HPTSNHC	01	2
		Mixed organic farming (crops, animal, aquaculture)	HPTSNHC	02	2
<b>Optional courses (4 credits)</b>					
2	Advanced animal sciences	Biosecurity in Livestock Production	HPTSNHC	03	2
		Advanced sustainable livestock system	HPTSNHC	04	2

3	Advanced crop sciences	Organic agriculture production using High-technology	HPTSNHC	05	2
		Biotechnology in organic Agriculture	HPTSNHC	06	2
4	Advanced aquaculture	Aquacultural technology	HPTSNHC	07	2
		Biosecurity in aquaculture farms	HPTSNHC	08	2
5	Advanced Post-harvest technology	Post-harvest technology in advanced organic agriculture	HPTSNHC	09	2
		Advanced quality control of post-harvest organic agricultural products	HPTSNHC	10	2
<b>Total</b>					<b>8</b>

**Table 3. List of special topics**

No.	Code		Name of special topics	Credits
	Letter	Number		
1	CDTSNHC	01	Organic agriculture: Current situation, prospects, challenges and solutions	3
2	CDTSNHC	02	Application of biotechnology in organic agriculture production	3
3	CDTSNHC	03	Certification for organic agriculture production	3
4	CDTSNHC	04	Standards and principles of organic agricultural production	3
5	CDTSNHC	05	Soils and fertilizers in organic agriculture production	3
6	CDTSNHC	06	Production and use of organic fertilizer	3
7	CDTSNHC	07	Microorganisms in sustainable agriculture production	3
8	CDTSNHC	08	Utilization of organic fertilizers in integration with crop productivity, quality and environment	3
9	CDTSNHC	09	Marker-Assisted Selection in Disease Resistance Breeding	3

No.	Code		Name of special topics	Credits
	Letter	Number		
10	CDTSNHC	10	Biological antagonism in organic agricultural production	3
11	CDTSNHC	11	Application of enzyme technology in organic agriculture	3
12	CDTSNHC	12	Enzyme production using agricultural residues	3
13	CDTSNHC	13	Pest Management in organic crop culture: scientific theory and practical application	3
14	CDTSNHC	14	Application of biological factors in pest management for organic production crops	3
15	CDTSNHC	15	Applied microorganisms in organic agriculture production	3
16	CDTSNHC	16	Trend in organic rice production with certification in integration with the chain of production, processing and consumption	3
17	CDTSNHC	17	Evaluation of soil fertility and planting arrangement	3
18	CDTSNHC	18	Replacement of antibiotic use in animals feed	3
19	CDTSNHC	19	Antibodies and supplementation antibodies in animals feed	3
20	CDTSNHC	20	Anti-Ethylene in preserving agricultural products after harvesting	3
21	CDTSNHC	21	The synthesis of ethylene in storage of agricultural products after harvest	3
22	CDTSNHC	22	Technological achievements and applied in biosafety shrimp farming in the world and in Vietnam	3
23	CDTSNHC	23	Research and use of complementary feed in aquaculture	3
24	CDTSNHC	24	Quality of aquaculture products and food safety	3

No.	Code		Name of special topics	Credits
	Letter	Number		
25	CDTSNHC	25	Using some available herbs in the Central region in poultry production	3
26	CDTSNHC	26	Using probiotic in poultry production	3

### \* Literature reviews

The literature review (essay) is about the same length as the PhD. topic (2 credits).

The essay should:

- Overview the research situation and issues related to the dissertation and require PhD. students to demonstrate the ability to analyze and evaluate the existing research works of the authors in and foreign countries that are closely related to the dissertation.

- Analysis and evaluation of research works in the country: listing the results of the research works, drawing general conclusions from the project, and draw conclusions of findings that are agreed or inconsistent with the results.

- Analysis and evaluation of foreign research projects, presentation summarizing the results of the study, to draw general conclusions from the project stating the conclusions agreed or inconsistent with the finding, analyzing and evaluating the scientific and practical significance of these conclusions.

- Presenting research idea, research objectives, and research methods of the PhD. student.

- Expected results of their research.

### \* Scientific Research and Dissertation

PhD. students are responsible for participation in and reporting research results at specialized scientific meeting and seminars in the country and abroad. Scientific research results of PhD. students must be published in specialized journals. PhD. students must report at least once at the annual scientific conference held by the Institute of Biotechnology, Hue University.

The PhD. dissertation must be a unique and creative scientific research project in the field of interested research, with new theoretical contributions, new knowledge or solutions that are valuable in the development and increase of scientific knowledge of the field of interested research or creative settlement of the issues related to a science or social practice.

PhD. dissertation containing approximately 100 A4 pages, 50% of which is presentation of the research results and discussion of PhD. students.

The new contribution of the dissertation could be:

- New results or new proposals that have additional effects to develop or enrich their available knowledge of the speciality.

- Applications of innovative and science-based development based on achievements available to meet practical requirements of science - technique, technology, economy - society, especially issues related to Organic agriculture.