

# THE DOCTORAL PROGRAMME

MAJOR: **Plant Physiology**

CODE: **9420101.12**

(Issued under the Decision No. 4555/QĐ-ĐHQGHN, on August 20, 2018 by  
the Rector of the VNU- University of Science)

## PROGRAMME STRUCTURE

### 1. Summary of programme curriculum requirements

#### *1.1. For PhD students not holding master's degree*

Students must complete the courses of the master's programme and the doctoral programme

Total credits for graduation: **136 credits**:

- Part 1: Supplementary courses (of the master's programme): 39 credits

+ *General knowledge*: 3 credits

+ *Basic and specialised knowledge*: 36 credits

- Part 2: Courses, seminars and overview essay of the doctoral programme: 17 credits

+ Courses: 9 credits

• *Compulsory*: 3 credits

• *Elective*: 6 credits

+ Seminars: 6 credits

+ Overview Essay: 2 credits

- Part 3: Scientific research (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 4: Participating in professional activities, assisting teaching and supporting training activities (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 5: PhD dissertation: 80 credits.

#### *1.2. For PhD students holding master's degree in related discipline*

Total credits for graduation: **112 credits**:

- Part 1: Supplementary courses (of the master's programme): 15 credits

+ *Compulsory*: 6 credits

+ *Elective*: 9 credits

- Part 2: Courses, seminars and overview essay of the doctoral programme: 17 credits

+ Courses:	9 credits
• <i>Compulsory:</i>	3 credits
• <i>Elective:</i>	6 credits
+ Seminars:	6 credits
+ Overview Essay:	2 credits

- Part 3: Scientific research (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 4: Participating in professional activities, assisting teaching and supporting training activities (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 5: PhD dissertation: 80 credits.

### ***1.3. For PhD students holding master's degree in relevant discipline***

Total credits for graduation: ***97 credits:***

- Part 1: Courses, seminars and overview assay of the doctoral programme: 17 credits

+ Courses:	9 credits
• <i>Compulsory:</i>	3 credits
• <i>Elective:</i>	6 credits
+ Seminars:	6 credits
+ Overview Essay:	2 credits

- Part 2: Scientific research (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 3: Participating in professional activities, assisting teaching and supporting training activities (Being compulsory for PhD students but not account for the credits of the Doctoral programme).

- Part 4: PhD dissertation: 80 credits.

## 2. Programme curriculum

### 2.1. For PhD students not holding master's degree

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	
<b>Part 1. Supplementary courses (of the master's programme)</b>							
<b>I. General knowledge</b>			<b>3</b>				
1.	PHI5001	<i>Philosophy</i>	3				
<b>II. Basic and specialised knowledge</b>			<b>36</b>				
<b>II.1. Compulsory courses</b>			<b>15</b>				
2.	BIO6001	<i>Biosystematics</i>	3	30		15	
3.	BIO6002	<i>Molecular Cell Biology</i>	3	30		15	
4.	BIO6062	<i>Biodiversity and conservation</i>	3	30		15	BIO6001, BIO6002
5.	BIO6041	<i>Algology</i>	3	25		20	BIO6001, BIO6002
6.	BIO6040	<i>Flowering plants</i>	3	30		15	BIO6001, BIO6002
<b>II.2. Elective courses</b>			<b>21/42</b>				
7.	BIO6009	<i>Population Ecology</i>	3	30		15	BIO6001; BIO6002
8.	BIO6008	<i>Forest Ecosystem</i>	3	30		15	BIO6001; BIO6002
9.	BIO6007	<i>Ecosystems Ecology</i>	3	30		15	BIO6001; BIO6002
10.	BIO6079	<i>Higher sporophytes</i>	3	30		15	BIO6001; BIO6002
11.	BIO6010	<i>Agroecosystem</i>	3	30		15	BIO6001, BIO6002
12.	BIO6120	<i>Flora and species conservation</i>	3	30		15	BIO6001, BIO6002
13.	BIO6011	<i>Aquatic Ecology</i>	3	30		15	BIO6001, BIO6002
14.	BIO6119	<i>Mycology</i>	3	30		15	BIO6001, BIO6002
15.	BIO6122	<i>Gymnospermae</i>	3	30		15	BIO6001, BIO6002
16.	BIO6121	<i>Science on Plant Resources</i>	3	30		15	BIO6001, BIO6002
17.	BIO6080	<i>Vegetation</i>	3	30		15	BIO6001, BIO6002
18.	BIO6081	<i>Palynology</i>	3	30		15	BIO6001, BIO6002
19.	BIO6057	<i>Genetical Principles of Plant Breeding</i>	3	30		15	BIO6001, BIO6002

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	
20.	BIO6052	<i>Terrestrial Ecology</i>	3	30		15	BIO6001, BIO6002
<b>Part 2. Courses, seminars and overview essay of the doctoral programme</b>							
<b>I. Courses</b>			<b>9</b>				
<b>I.1. Compulsory</b>			<b>6</b>				
21.	BIO8069	<i>Physiology of stress tolerance in plants</i>	3	30	0	15	
22.	BIO8070	<i>Plant cell technology</i>	3	30	0	15	
<b>I.2. Elective</b>			<b>3/9</b>				
23.	BIO8073	<i>Molecular pathology of plants</i>	3	30		15	
24.	BIO8071	<i>Microalgae biotechnology</i>	3	30		15	
25.	BIO8074	<i>Regulation of gene expression</i>	3	30		15	
<b>II. Seminars</b>			<b>6</b>				
26.	BIO9121	<i>Special Topics 1</i>	2				
27.	BIO9122	<i>Special Topics 2</i>	2				
28.	BIO9123	<i>Special Topics 3</i>	2				
<b>III. Overview Essay</b>			<b>2</b>				
29.	BIO8067	<i>Overview Essay</i>	2				
<b>Part 3. Scientific research</b>							
30.		PhD students establish the research plan, implementate and publish the results of their dissertations in the scientific journals under the guidance of their supervisors.					
<b>Part 4. Participating in professional activities, assisnting teaching and supporting training activities</b>							
31.		Department (professional unit) constructs a timetable for professional acitivities and schedules for each PhD student to present his/her professional acitivities in the seminar organised by the Department for each academic year. It is obligated to PhD students to attend all scientific seminars/conferences/symposiums organised/required by the Department					
<b>Part 5. PhD dissertation</b>							
32.	BIO9007	<i>PhD dissertation</i>	<b>80</b>				
<b>Total:</b>			<b>136</b>				

## 2.2. For PhD students holding master's degree in related discipline

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	
<b>Part 1. Supplementary courses (of the master's programme)</b>							
<b>I.1. Compulsory courses</b>			<b>6</b>				
1.	BIO8068	<i>Photosynthesis and crop productivity</i>	3	30		15	
2.	BIO8072	<i>Plant growth regulators</i>	3	30		15	BIO8068
<b>I.2. Elective courses</b>			<b>9/15</b>				
3.	BIO6001	<i>Biosystematics</i>	3	30		15	
4.	BIO6002	<i>Molecular Cell Biology</i>	3	30		15	
5.	BIO6062	<i>Biodiversity and conservation</i>	3	30		15	BIO6001, BIO6002
6.	BIO6041	<i>Algology</i>	3	25		20	BIO6001, BIO6002
7.	BIO6040	<i>Flowering plants</i>	3	30		15	BIO6001, BIO6002
<b>Part 2. Courses, seminars and overview essay of the doctoral programme</b>							
<b>I. Courses</b>							
<b>I.1. Compulsory</b>			<b>6</b>				
8.	BIO8069	<i>Physiology of stress tolerance in plants</i>	3	30	0	15	
9.	BIO8070	<i>Plant cell technology</i>	3	30	0	15	
<b>I.2. Elective</b>			<b>3/9</b>				
10.	BIO8073	<i>Molecular pathology of plants</i>	3	30		15	
11.	BIO8071	<i>Microalgae biotechnology</i>	3	30		15	
12.	BIO8074	<i>Regulation of gene expression</i>	3	30		15	
<b>II. Seminars</b>			<b>6</b>				
13.	BIO9121	<i>Special Topics 1</i>	2				
14.	BIO9122	<i>Special Topics 2</i>	2				
15.	BIO9123	<i>Special Topics 3</i>	2				
<b>III. Overview Essay</b>			<b>2</b>				
16.	BIO8067	<i>Overview Essay</i>	2				
<b>Part 3. Scientific research</b>							
17.		PhD students establish the research plan, implementate and publish the results of their dissertations in the scientific journals under the guidance of their supervisors					
<b>Part 4. Participating in professional activities, assisnting teaching and supporting training activities</b>							

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	
18.		Department (professional unit) constructs a timetable for professional activities and schedules for each PhD student to present his/her professional activities in the seminar organised by the Department for each academic year. It is obligated to PhD students to attend all scientific seminars/conferences/symposiums organised / required by the Department.					
<b>Part 5. PhD dissertation</b>							
19.	BIO9007	<i>PhD dissertation</i>	<b>80</b>				
<b>Total:</b>			<b>112</b>				

### 2.3. For PhD students holding master's degree in relevant discipline

No	Course code	Course name	Credits	Credit hours			Prerequisite courses
				Lecture	Practice	Self-study	
<b>Part 1. Courses, seminars and overview essay of the doctoral programme</b>							
<b>I. Courses</b>			<b>9</b>				
<b>I.1. Compulsory courses</b>			<b>6</b>				
1.	BIO8069	<i>Physiology of stress tolerance in plants</i>	3	30	0	15	
2.	BIO8070	<i>Plant cell technology</i>	3	30	0	15	
<b>I.2. Elective courses</b>			<b>3/9</b>				
3.	BIO8073	<i>Molecular pathology of plants</i>	3	30		15	
4.	BIO8071	<i>Microalgae biotechnology</i>	3	30		15	
5.	BIO8074	<i>Regulation of gene expression</i>	3	30		15	
<b>II. Seminars</b>			<b>6</b>				
6.	BIO9121	<i>Special Topics 1</i>	2				
7.	BIO9122	<i>Special Topics 2</i>	2				
8.	BIO9123	<i>Special Topics 3</i>	2				
<b>III. Overview Essay</b>			<b>2</b>				
9.	BIO8067	<i>Overview Essay</i>	2				
<b>Part 2. Scientific research</b>							
10.		PhD students establish the research plan, implementate and publish the results of their dissertations in the scientific journals under the guidance of their supervisors.					
<b>Part 3. Participating in professional activities, assisnting teaching and supporting training activities</b>							
11.		Department (professional unit) constructs a timetable for professional acitivities and schedules for each PhD student to present his/her professional acitivities in the seminar organised by the Department for each academic year. It is obligated to PhD students to attend all scientific seminars / conferences / symposiums organised/required by the Department.					
<b>Part 4. PhD dissertation</b>							
12.	BIO9007	<i>PhD dissertation</i>	<b>80</b>				
<b>Total:</b>			<b>97</b>				