MINISTRY OF AGRICULTURE
AND RURAL DEVELOPMENT
VIETNAM NATIONAL UNIVERSITY OF AGRICULTURE

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

PROGRAM SPECIFICATION
CROP SCIENCE - ADVANCED EDUCATION PROGRAM

1. PROGRAM DESCRIPTION

Program title: Crop Science – Advanced Education Program (CS-AEP)

Degree name:Bachelor of Crop Science (Advanced Education Program)

Program code: 52906209

Type of Program:Full-time

Program duration: 4.5 years

Language: English

Total required credits: 160

Awarding Institution: Vietnam National University of Agriculture

The program was established in 2006;

The versions of program specification were revised in 2011, 2013, 2015 and 2017

2. PROGRAM OBJECTIVES AND EXPECTED LEARNING OUTCOMES

2.1. Program objectives (PO)

The Crop Science – Advanced Education Program (CS-AEP) aims to train and supply high quality graduates, who have high responsibility and professional ethics, conduct and solve agricultural challenges under rapid changes of nation and the world.

Specific objectives:Students graduating the Crop Science – Advanced Education Program will:

PO1. Obtain employment in agriculture at governmental institutions, businesses or organizations, successfully applying the skills acquired in the educational program;

PO2. Contribute to the advancement of crop science, production and management; Be creative in researches, discoveries, and solving problems;

PO3. Pursue higher education; Advance in careers to become specialists, managers, and leaders;

PO4. Become citizens with professional ethics and passion, proactiveness and creation.

2.2. Expected learning outcomes

At the end of the study programme, graduates will:

Knowledge, Skills, Ethics and Attitudes	Expected learning outcomes (ELOs)
Generic knowledge	ELO1: Apply scientific knowledge systems of political sociology and humanities in professional activities and everyday life
	ELO2: Apply basic scientific knowledge of plant growth and development in research and crop production.
Specialized knowledge	ELO3: Analyze relationships between biological, genetic, physiological, and environmental factors impacting crops
	ELO4: Develop crop production that brings benefits to the economy
	ELO5: Evaluate safe, effective, and sustainable crop production and management systems
Generic skills	ELO6: Develop effective leadership and cooperation in teamwork
	ELO7: Perform effective communication through speaking, listening, writing and body language
	ELO8: Use English effectively in learning, communication, and research of crop science; Achieve B2 level in English or equivalent
Professional skills	ELO9: Develop crop production models applying advanced processes and technology
	ELO10: Conduct research on crop science and production
	ELO11: Apply critical thinking in analysis, evaluation, and solving problems in professional fields
Ethics and Attitudes	ELO12: Express an awareness of lifelong learning
	ELO13: Possess responsibility and professional ethics
	ELO14: Follow regulations and legislations on crop production

** Note: The ELOs of program was benchmarked with Crop Science program of Can Tho University, Vietnam and Plant Science Program- Minor Concepts in Crop Production of Wageningen UR, Netherlands (Appendix 2)*

3. CAREER PROSPECTS

3.1.Job opportunities

Graduates from Crop Sciences – Advanced Education Program have career opportunities in areas of crop production, plant breeding, crop science and crop business as follows:

**** Areas of career:***

- Management of crop production
- Research in crop science
- Crop cultivation

**** Job positions:***

- Lecturers
- Researchers

- Specialist or consultant in the field of crop crop/agricultural production
- Manager in crop/agricultural production
- Manager in agricultural business

**** Work places:***

- Educational institutes: high schools, vocational training, colleges, universities…
-Research institutes, centers, governmental organizations or international organizations related to agriculture
- Agricultural/ Crop enterprises, farms and coopertavies
- Professional Associations related to crop/ agriculture
- Their-own enterprises, farms, cooperatives

3.2. Post-graduate study opportunities

The bachelors graduating from the CS-AEP can pursue post-graduate study in agronomy, plant breeding, crop science, crop production, plant protection, and plant biotechnology in Vietnam, ASEAN and overseas universities such as University of California, Davis, Cornell University, Taiwan National University, etc.

4. ADMISSION TO THE PROGRAM

Applicants must satisfy the University's general and specific requirements for admission to the program are detailed below:

**** Vietnamese students***

Eligible criteria: Students pass the national entrance exam to university as regulated by Ministry of Education and Training;

How to apply: Call for application will be announced on university and faculty's websites 2-3 weeks after freshmen' enrolment. Students are required to submit an application form in Office of Advanced Program – Crop Science of Faculty of Agronomy.

Students will take an English exam similar to TOEFL ITP and be selected based on the English results (minimum is score 300).

Students who have English certificates still in valid and with equivalent scores will be exempted.

**** International students***

Eligible criteria: International students completing high schools or studying at universities are eligible to apply.

How to apply: International students should contact and submit an application form and documents through the International Cooperation Office of the University. Documents include high school or university transcript, letter of motivation, English certificates for students from non-English speaking countries. The International Cooperation Office will inform selection results.

5. EDUCATIONAL PHILOSOPHY, TEACHING AND LEARNING STRATEGIES

5.1. Educational Philosophy

The Educational Philosophy of the program is "Student-centered approach" in which students learn by inquiring.

5.2. Teaching and Learning Strategies

The focus of the program is to enhance students' action learning through the inquiry-based-learning cycle: inquisitiveness, exploration, creation, and discussion, analyse, problem-solve. This aims to make students "to learn by inquiry, to be proficient practitioners, to nurture bright soul, to inspire spirits".

Teachers are facilitators who help students "to learn professional competencies, to nurture soul, to inspire spirits toward crop science and technology and the contribution to community" through teaching and learning strategies.

6. ASSESSMENT METHODS

After the first year, students will be required to pass the second English exam similar to TOEFL ITP with minimum score of 500 to stay in the program. Students who have English certificates still in valid and with equivalent scores will also be exempted.

Formative assessments are applied in all courses of the program. Suitable assessment methods are designed to measure and evaluate students' progress and achievement in knowledge, skills, ethics and attitudes. Each assessment method uses rubric with defined and clear criteria. Assessment methods are provided to all students at the beginning of the course. Difficulty increases with levels of students, from the first to the final years, to measure students' ability in knowledge and skill application, critical thinking development…in specific courses and contents.

Various assessment methods include class participation, individual works, group works, presentation, practice, essay, assignment, projects. All courses' exams and assessment (except courses related to Maxims, Lenism and Ho Chi Minh's Ideology) are in English. Students are required to submit works on time to develop their time management skills.

In the final semester, students conduct minor projects under supervision. Students also need to defense the minor project in front of a committee. Supervisor assesses the projects based on knowledge, skills and attitude and ethics.

In order to graduate, students are also required to pass the final English exam with minimum score of TOEFL 550 or equivalent.

7. REGULATION OF ASSESSMENT AND ACADEMIC STANDARDS

Grading system:4

Summary of grade and mark classification

TT	10-point scale	4-point scale GPA		Pass/Fail	Classification
		Grade	Marks		
1	8.5 – 10	A	4.0	Pass	High distinction
2	8.0 – 8.4	B+	3.5	Pass	Distinction
3	7.0 – 7.9	B	3.0	Pass	Credit
4	6.5 – 6.9	C+	2.5	Pass	Credit
5	5.5 – 6.4	C	2.0	Pass	Pass
6	5.0 – 5.4	D+	1.5	Pass	Pass
7	4.0 – 4.9	D	1.0	Conditional Pass	Conditional Pass
8	<4.0	F	0	Fail	Fail

Summary of Degree classification

TT	Cumulative Point Average	Degree classification
1	3.60 – 4.00	Outstanding
2	3.20 - 3.59	Excellent
3	2.50 - 3.19	Good
4	2.00 - 2.49	Pass
5	< 2.00	Fail

Training process: For 9 semesters, equivalent to 4.5 year, students will need to accumulate 160 credits of which 70 credits for foundation, 27 credits for fundamental, 33 credits for major (20 compulsory credits and 13 elective credits) and 30 credits for specialization (23 compulsory credits and 7 elective credits). Students are also required to complete 3 credits for physical training, 11 credits for Citizen Military training, 6 credits for soft skill training and 2 credits for computer skills.

Award requirements:Students will receive program award only when completing all 160 credits of the program, having accumulative point average above 2.0 and minimum English score of 550 TOEFL ITP or equivalent, achieving physical and Citizen Military Training and soft skill certificates, having paid all tuition fees, completing students' obligations and submitting forms to Office of Education Management of the University for graduation.

8.CURRICULUM STRUCTURE& CONTENT

Note: Courses with bold and underlined format are prerequisite courses. The contributions of courses to ELOs of the program are indicated in Skill matrix (Appendix 3)

Blocks of knowledge	No	Course code	Course name	Credits	Theory	Practice	Code of Prerequisites/ Preceding courses	Course status	Year 1	Year 2	Year 3	Year 4	Year 5	Semester
General	1	SNE01010	English Listening and Speaking 1	9	8	1		Compulsory	1					1
70 credits (Theory 63,5; Practice 6;5)	2	SNE01011	English Reading and writing 1	8	8	0		Compulsory	1					1
	3	MLE01001	Basic Principles of Marxism and Leninism 1	2	2	0		Compulsory	1					1
	4	SNE01012	English Listening and Speaking 2	7	6	1	SNE01010	Compulsory	1					2
	5	SNE01013	English Reading and writing 2	6	6	0	SNE01011	Compulsory	1					2
	6	MLE01002	Basic Principles of Marxism and Leninism 2	3	3	0	MLE01001	Compulsory	1					2
	7	MLE01004	The details of The Revolutionary guideline of Vietnamese Communist Party	3	3	0		Compulsory	1					2
	8	MLE01005	Ho Chi Minh's Ideology	2	2	0		Compulsory	1					2
	9	THE01001	Calculus 1	3	3	0		Compulsory	1	2				3
	10	THE01003	Principles of Physics 1	2	2	0		Compulsory		2				3
	11	MTE01001	General Chemistry 1	3	2	1		Compulsory		2				3
	12	MTE01003	Organic Chemistry 1	3	2	1		Compulsory		2				3
	13	NHE01001	Introductory Biology 1	3	3	0		Compulsory		2				3
	14	SHE01003	Introductory Biology 2	3	3	0		Compulsory		2				3
	15	THE01002	Calculus 2	3	3	0	THE01001	Compulsory	1	2				4
	16	THE01004	Principles of	2	2	0	THE01003	Compulsory		2				4

Blocks of knowledge	No	Course code	Course name	Credits	Theory	Practice	Code of Prerequisites/ Preceding courses	Course status	Year 1	Year 2	Year 3	Year 4	Year 5	Semester
			Physics 2											
	17	MTE01002	General Chemistry 2	3	2	1	MTE01001	Compulsory		2				4
	18	MTE01004	Organic Chemistry 2	2	1,5	0,5	MTE01003	Compulsory		2				4
	19	NHE01002	Introductory Biology 3	3	2	1	NHE01001	Compulsory		2				4
Foundation	20	QLE02001	Principles of Soil Science	3	2	1	MTE01001, MTE01003, THE01003	Compulsory		2				4
27 credits (Theory 22,5; Practice 4,5)	21	THE02001	Application of Computers in Agriculture	3	1	2		Compulsory		2				4
	22	CPE02001	General Biochemistry	2	1,5	0,5	MTE01004	Compulsory			3			5
	23	NHE02002	Plant Morphology and Anatomy	3	2	1	NHE01002	Compulsory			3			5
	24	NHE02003	Plant Genetics	4	3,5	0,5	MTE01004; NHE01001	Compulsory			3			5
	25	NHE02004	Plant Physiology	3	2	1	MTE01004; NHE01002	Compulsory			3			5
	26	KTE02013	Microeconomics	3	3	0	THE01002	Compulsory			3			5
	27	SHE02007	Introduction to Biotechnology	3	3	0	NHE01001; NHE02003	Compulsory			3			6
	28	KTE02014	Macroeconomics	3	3	0	THE01002	Compulsory			3			6
Major	29	SNE03002	English for Agronomy	3	2	1	SNE01012; SNE01013	Compulsory		2				3
Compulsory 20 credits (Theory 13,5; Practice: 6,5)	30	THE03001	Applied Statistics in Agricultural Science	4	3	1	THE01002; THE02001	Compulsory			3			5
Elective credits: 13/28	31	QLE03001	Plant-Water-Soil Relationships	3	2	1	THE01004; **QLE02001**	Compulsory			3			6
	32	NHE03002	Plant Breeding	3	2	1	NHE02002;**NHE02003**	Compulsory				4		7
	33	NHE03003	Plant Pathology	4	2,5	1,5	NHE01002	Compulsory				4		7
	34	NHE03004	Entomology and Pest Management	3	2	1	SHE01003	Compulsory				4		7
	35	NHE03005	Principles of Agronomic Crop Production in Temperate and Tropical Systems	3	2,5	0,5	QLE02001	Elective			3			5
	36	NHE03006	Plant and Society	3	2,5	0,5	NHE01002	Elective			3			5
	37	NHE03007	Principles of Fruit Production	3	2	1	NHE01002	Elective			3			5
	38	CPE03001	Postharvest Physiology and Handling of Horticultural Crops	4	3	1	NHE02004; CPE02001	Elective			3			6
	39	KDE02006	Principles of Management	2	2	0		Elective			3			6
	40	SHE03005		3	2	1	NHE02003; THE02001	Elective			3			6
	41	SHE03054	Biosafety	2	2	0		Elective			3			6
	42	KDE03000	Farm Management	3	3	0	KDE02006	Elective				4		7
	43	KDE03001	Cooperatives and small business management	3	3	0	KDE02006	Elective				4		7
	44	SHE03058	High-tech in Agriculture	2	2	0		Elective				4		8
Specialization	45	NHE04001	Plant nutrition	3	2	1	MTE01002; NHE02002	Compulsory			3			6
Compulsory:11 credits (Theory : 8.5; Practice :15)	46	MTE04001	Crop Ecology	3	2,5	0,5	QLE03001; NHE04001	Compulsory				4		7
Elective 7/16 credits	47	NHE04008	Research methods	2	2	0	SNE03002; **THE03001**	Compulsory				4		7
	48	NHE04002	Weed Science	3	2	1	NHE01002; MTE04001	Compulsory				4		8
	49	NHE04007	Sustainable Farming	2	1,5	0,5	QLE03001; NHE04001	Elective				4		7
	50	NHE04006	Integrated Pest Management	3	2	1	NHE03003, NHE03004	Elective				4		8
	51	NHE04003	Principles and Practices of Plant Propagation	2	1,5	0,5	NHE03002	Elective				4		8
	52	NHE04004	Green house and	2	1,5	0,5	NHE04001;	Elective				4		8

Blocks of knowledge	No	Course code	Course name	Credits	Theory	Practice	Code of Prerequisites/ Preceding courses	Course status	Year 1	Year 2	Year 3	Year 4	Year 5	Semester
			Nursery Crop Production				NHE03003; NHE03004							
	53	NHE04005	Crop Management System for Vegetable Production	3	2	1	**NHE02004;** NHE03002; NHE03003; NHE03004	Elective				4		8
	54	NHE04011	Sustainable Agriculture	4	3	1	QLE03001; NHE03003; NHE03004; MTE04001	Elective				4		8
Internship and Thesis	55	NHE04009	Internship	2	0	2	NHE04008	Compulsory				4		8
	56	NHE04010	Thesis	10	0	10	**NHE04008**	Compulsory					5	9
Physical and Citizen Military training	57	GT01016	General physical training	1	0	1		Compulsory	1					1
	58	GT01017/ GT01018/ GT01019/ GT01020/ GT01021/ GT01022/ GT01023/ GT01014/ GT01015	Physical training	2	0	2		Elective	1	2				2,3
	59	QS01011	Military training 1	2	2	0		Compulsory	1					1
	60	QS01012	Military training 2	2	2	0		Compulsory	1					2
	61	QS01013	Military training 3	6	1	5		Compulsory			3			6
	62	QS01014	Military training 4	1	1	0		Compulsory		2				4

Sum total of units of the Curriculum

General knowledge	70 credits
Foundation knowledge	27 credits
Major knowledge	33 credits
Professional knowledge	18 credits
Thesis and Internship	12 credits
Total credits	**160 credits.**

**** Soft skill training***

Module title	Course code	Course name	Credits*	Course status
Soft skills	KN01002	Leadership Skills	2	Elective
	KN01003	Self -management Skills	2	Elective
	KN01004	Job searching skills	2	Elective
	KN01005	Teamwork skills	2	Elective
	KN01006	International integration	2	Elective

** Note: Students must obtain minimum 6 credits*

**** Courses for computer skills***

Module title	Course code	Course name	Credits*	Course status
Computer skills	ITC03002	Information Technology applications in Economics and Society	2	Elective
	ITC03003	Information Technology applications in Resource and environment management	2	Elective

	ITC03004	Computer graphic design	2	Elective
	ITC03005	Basic web application development	2	Elective

** Note: Students must obtain minimum 2 credits*

****Physical and Citizen Military training***

Module title	Course code	Course name	Credits	Course status
Physical courses (3 credits)	GT01016	General physical training	1	Compulsory
	GT01017/ GT01018/ GT01019/ GT01020/ GT01021/ GT01022/ GT01023/ GT01014/ GT01015	Physical training 1, 2 (select 2 of 9 offered courses)	2	Elective
Citizen Military courses (11 credits)	QS01011	Citizen Military training 1	2	Compulsory
	QS01012	Citizen Military training 2	2	Compulsory
	QS01013	Citizen Military training 3	6	Compulsory
	QS01014	Citizen Military training 4	1	Compulsory
	Total			

9. STUDY PLAN (SAMPLE)

Note: Curriculum road map is illustrated in Appendix 4

First year

Semester	Course code	Course name	Credits			Prequisites/ Preceding course	Course status
			Total	Lecturing	Practice		
1	SNE01010	English Listening and Speaking 1	9	8	1		Compulsory
1	SNE01011	English Reading and writing 1	8	8	0		Compulsory
1	MLE01001	Basic Principles of Marxism and Leninism 1	2	2	0		Compulsory
1	GT01001	General physical training	1	0	1		Compulsory
1	QS01011	Citizen Military training 1	2	2	0		Compulsory
2	SNE01012	English Listening and Speaking 2	7	6	1	SNE01010	Compulsory
2	SNE01013	English Reading and writing 2	6	6	0	SNE01011	Compulsory
2	MLE01002	Basic Principles of Marxism and Leninism 2	3	3	0	MLE01001	Compulsory
2	MLE01004	The details of The Revolutionary guideline of Vietnamese Communist Party	3	3	0		Compulsory
2	MLE01005	Ho Chi Minh's Ideology	2	2	0		Compulsory
2	GT01017/ GT01018/ GT01019/ GT01020/ GT01021/ GT01022/	Physical training	1	0	1		Compulsory

	GT01023/ GT01014/ GT01015						
2	QS01012	Citizen Military training 2	2	2	0		Compulsory
Total			**40**	**38**	**2**		
Credits for physical and Citizen Military training			**6**	**4**	**2**		

Second year

Semester	Course code	Course name	Credits			Prequisites/ Preceding course	Course status
			Total	Lecturing	Practice		
3	THE01001	Calculus 1	3	3	0		Compulsory
3	THE01003	Principles of Physics 1	2	2	0		Compulsory
3	MTE01001	General Chemistry 1	3	2	1		Compulsory
3	MTE01003	Organic Chemistry 1	3	2	1		Compulsory
3	NHE01007	Introductory Biology 1	3	3	0		Compulsory
3	SHE01003	Introductory Biology 2	3	3	0		Compulsory
3	SNE03002	English for Agronomy	3	2	1	SNE01012; SNE01013	Compulsory
4	THE01002	Calculus 2	3	3	0	THE01001	Compulsory
4	THE01004	Principles of Physics 2	2	2	0	THE01003	Compulsory
4	MTE01002	General Chemistry 2	3	2	1	MTE01001	Compulsory
4	MTE01004	Organic Chemistry 2	2	1,5	0,5	MTE01003	Compulsory
4	NHE01002	Introductory Biology 3	3	2	1	NHE01007	Compulsory
4	QLE02001	Principles of Soil Science	3	2	1	MTE01001, MTE01003, THE01003	Compulsory
4	THE02001	Application of Computers in Agriculture	3	1	2		Compulsory
4	QS01014	Citizen Military training 4	1	1	0		
Total credits			**39**	**30,5**	**8,5**		
Credits for Citizen Military training			**1**	**1**	**0**		
Credits for computer skills			**2**				

Third year

Semester	Course code	Course name	Credits			Perquisites/ Preceding course	Course status
			Total	Lecturing	Practice		
5	CPE02001	General Biochemistry	2	1,5	0,5	MTE01004	Compulsory
5	THE03001	Applied Statistics in Agricultural Science	4	3	1	THE01002; THE02001	Compulsory
5	NHE02002	Plant Morphology and Anatomy	3	2	1	NHE01002	Compulsory
5	NHE02003	Plant Genetics	4	3,5	0,5	MTE01004; NHE01001	Compulsory
5	NHE02004	Plant Physiology	3	2	1	MTE01004; NHE01009	Compulsory
5	KTE02013	Microeconomics	3	3	0	THE01002	Compulsory
5	NHE03006	Plant and Society	3	2,5	0,5	NHE01002	Elective
5	NHE03007	Principles of Fruit Production	3	2	1	NHE01002	Elective
5	NHE03005	Principles of Crop Production in Temperate and Tropical Systems	3	2,5	0,5	QLE02001	Elective
6	SHE02007	Introduction to Biotechnology	3	3	0	NHE01001; NHE02003	Compulsory
6	NHE04001	Plant nutrition	3	2	1	MTE01002; NHE02002	Compulsory
6	QLE03001	Plant-Water-Soil Relationships	3	2	1	THE01004; **QLE02001**	Compulsory
6	KTE02014	Macroeconomics	3	3	0	THE01002	Compulsory
6	KDE02006	Principles of management	2	2	0		Elective
6	CPE03001	Postharvest Physiology and Handling of Horticultural Crops	4	3	1	NHE02004; CPE02001	Elective
6	SHE03005	Applied Bioinformatics	3	2	1	NHE02003; THE02001	Elective
6	SHE03054	Biosafety	2	2	0		Elective
6	QS01013	Military training 3	6	1	5		
Total compulsory credits			**31**	**25**	**6**		
Total elective credits (minimum 7 credits)			**20**	**16**	**4**		
Credits for military training			**6**	**1**	**5**		

Fourth year

Semester	Course code	Course name	Credits			Perquisites/ Preceding course	Course status
			Total	Lecturing	Practice		
7	NHE03002	Plant Breeding	3	2	1	NHE02002; **NHE02003**	Compulsory
7	NHE03003	Plant Pathology	4	2,5	1,5	NHE01002	Compulsory
7	NHE03004	Entomology and Pest Management	3	2	1	SHE01003	Compulsory
7	MTE04001	Crop Ecology	3	2,5	0,5	QLE03001; NHE04001	Compulsory
7	NHE04008	Research methods	2	2	0	SNE03002; **THE03001**	Compulsory
7	KDE03001	Cooperatives and small	3	3	0	KDE02006	Elective

Semester	Course code	Course name	Credits			Perquisites/ Preceding course	Course status
			Total	Lecturing	Practice		
		business management					
7	KDE03000	Farm Management	3	3	0	KDE02006	Elective
7	NHE04007	Sustainable Farming	2	1,5	0,5	QLE03001; NHE04001	Elective
8	NHE04002	Weed Science	3	2	1	NHE01009; MTE04001	Compulsory
8	NHE04009	Internship	2	0	2	NHE04008	Compulsory
8	NHE04006	Integrated Pest Management	3	2	1	NHE03003, NHE03004	Elective
8	NHE04003	Principles and Practices of Plant Propagation	2	1,5	0,5	NHE03002	Elective
8	NHE04004	Green house and Nursery Crop Production	2	1,5	0,5	NHE04001; NHE03003; NHE03004	Elective
8	NHE04005	Crop Management System for Vegetable Production	3	2	1	**NHE02004;** NHE03002; NHE03003; NHE03004	Elective
8	SHE03058	High-tech in Agriculture	2	2	0		Elective
8	NHE04011	Sustainable Agriculture	4	3	1	QLE03001; NHE03003; NHE03004; MTE04001	Elective
Total compulsory credits			**20**	**13**	**7**		
Total elective credits (minimum 13 credits)			**24**	**19,5**	**4,5**		
Total credits for soft skill training			**4**				
Total credits for computers			**2**				

Fifth year

Semester	Course code	Course name	Credits			Perquisites/ Preceding course	Course status
			Total	Lecturing	Practice		
9	NHE04010	Undergraduate thesis	10	0	10	**NHE04008**	Compulsory
Total compulsory credits			**10**		**10**		
Total credits for soft skill training			**2**				

10. COURSE CONTENT AND WORK LOAD

Courses for socio political and humanities

MLE01001. Principles of Marxism - Leninism 1 (2: 2-0; 4; 90)

This course consists of 4 chapters which include Introduction to basic principles of Marism and Leninism; Dialectical materialism; Materialist dialectics; Historical materialism.

MLE01002. Principles of Marxism – Leninism 2 (3: 3 - 0; 6; 135)

This course consists of 6 chapters focusing on the laws, economic principles and and normative issues socialist construction.in Marxism - Leninism theory.

MLE01004. Revolutionary lines of the Communist Party of Vietnam (3: 3 – 0; 6; 135)

This course consists of 9 chapters which include General module on: The birth of the Communist Party of Vietnam and the first political program of the Party; The Way to Fight the Government of 1930-1945; The resistance war against the French colonialists and the American imperialists invaded 1945-1975; Industrialization; The way to build a market economy, socialist orientation; The way to build the political system; The way of building, developing culture and solving social problems; Foreign policy.

MLE01005. Ho Chi Minh's Ideology (2: 2-0; 4; 90)

This course consists of 4 chapters which include The module content is Ho Chi Minh's thought on the path of national liberation and construction the new society. Previous modules: Principles of Marxism - Leninism 2.

English courses

SNE01010. English Listening and Speaking 1 (9: 8 - 1; 18; 405)

This course consists of 10 units, providing learners with sentence structures, basic expressions in spoken language and vocabulary related to topics of celebrities, occupations, holidays, cities, wildlife, sports, entertainment, tourism, events to help learners consolidate and develop their listening and speaking skills in order to reach B1 level. Also, it helps learners to distinguish sounds, apply correct pronunciation to sounds, words, sentences, conversations and use knowledge of the culture of English speaking countries to solve problems in new situations.

SNE01011. Reading& writing 1 (8: 8-0; 16; 360)

This course consists of 10 units about Jobs, Vacations, Cities, Wild life, Sports, Culture, Beliefs; Experiences, Food and Charity.

SNE01012. English Listening and Speaking 2 (7: 6-1; 14; 315)

This course consists of 10 units in Takeaway 3 book with contents related to daily life such as fashion, job, entertainment, health, travelling and so on. Besides, this course has 15 hrs for practice under Developing tactics for listening with some topics to enhance students' practice and develop listening and speaking skills.

SNE01013. English Reading and Writing 2 (6: 6 –0; 12; 270)

This course consists of 10 units about World Languages, Fashion, Life, Story, Home, Charity, Health, Space travel, Experiences and Adventures. Main languages items include vocabulary on the mentioned topics. Main grammar structures are tenses (present simple, present continuous, present perfect, past perfect, future, and present perfect continuous), clauses (time, reason, result, comparison and contrast) and aspects (active, passive). Main skills include analyzing questions before doing tasks, comprehending an

ad, writing a letter for a certain kind of readers, understanding events and stories based on chronological signals, making plans, scanning for main ideas, listing information in a table/ chart, organizing ideas in a report, and predicting before reading.

SNE03002. English for Agronomy(3: 2-1; 6; 135)

This course consists of 10 theoritical lessons: Theory: The parts of a plant and their functions; The life cycle of a plant; Light affect plant growth; Temperature affects plant growth; Water affects plant growth; Nutrition affects plant growth; Manures and Fertilizers; Plant protection; Plant diseases; Drainage and irrigation.

Foundation – Basic science courses

MTE01001. General chemistry 1 (3: 2- 1; 6; 135)

This course consists of 8 chapters about stoichiometry, gases, atomic structure, periodic table, chemical bonding equilibrium and 5 lab lessons.

MTE01002. General chemistry 2 (3: 2- 1; 6; 135)

This course consists of 6 chapters about acids and bases, equilibrium in solution, electrochemistry, nuclear chemistry and elements and 5 lab lessons.

MTE01003. Organic Chemistry 1 (3: 2 - 1; 6; 135)

This course consists of 6 chapters including: General, Alkane, Alkene, Alkyne, Arene and halides. The content of general of organic chemistry are linkage, isomer, dividing of organic compounds. The content of chapters about introducing of hydrocarbon groups (saturated, unsaturated, aromatic) and halogen derivatives are characteristic of structure, properties, natural state, preparations and applications.

MTE01004. Organic chemistry (2: 1.5- 0.5; 4; 90)

This course consists of 7 chapters about Alcohol, Carbonyl compounds, carboxylic acid, amine, Carbohydarte, Lipid, amino acid and 3 practices.

NHE01001. Biological science 1A (3: 3-0; 6; 135)

This course consists of 12 theoretical chapters: General Introduction to Biology and the Discovering of Life; Constructing prokaryotic cells and eukaryotic cells; Cell cycle and process of cell division, infection reduction; Linkage between cells in the living organism; Cellular respiration; Photosynthesis; Molecular basis of genetics; Gene

expression; Genetics in bacteria and viruses; Genetic information and genomes of eukaryotic cells; ADN technology and some basic genetic techniques.

NHE01002. Introductory Biology BIS 1C (3: 2 - 1; 6; 135)

This course consists of 13 chapters about Plant cell and tissues; Root, stem and leaf; Transportation in plant; The growth and development of plant; Approaches to classifying organism; Protista; Fungi; Land plant; Genetic control of flowering; Plant biotechnology.

This course also consist of 5 practices: Observation of plant cells; Observation organisms in a drop of water; Growth and development of monocots, Growth and development of dicots; Evolution in the plant kingdom.

SHE01003. Introductory of Biology 2 (03:3-0; 6; 135)

This course consists of 5 chapters about Introduction to Living Animals; Continuity and Evolution of Animal Life; Diversity of Animal Life; Activity of Life; Animals and Their Environments.

THE01001. Calculus 1 (03TC: 3–0; 6; 135)

This course consists of 5 chapters about basic knowledge of continuity, differential calculus and the application of analysis of functions of single variable and multiple variables; Introduction to linear algebra and analytic geometry.

THE01002. Calculus 2 (03: 3–0; 6; 135)

This course consists of the basics knowledge of mathematical calculus for a single variable (continuing the course Calculus 1) with the contents of integration, techniques and application of integration, the introduction on differential equations and system of differential equations.

THE01003. Principles of Physics 1 (2: 2 –0; 4; 90)

This course consists of 10 units which include the system of units of measurement and unit conversion, the motion of like-point object, dynamic of motion, motion of a solid, work and energy, gravitation, fluid mechanic, mechanical vibrations and waves, temperature and heat, thermodynamic.

THE01004. Principles of Physics 2 (2: 2 –0; 4; 90)

This course consists of 9 units, including Electrostatic field, Magnetic field, Electromagnetic field and wave, Light wave, Special Relativity theory, Quantum Physics, Atomic Physics and Nuclear Physics.

Professionals – Fundamental courses

CPE02001. General Biochemistry (2: 1.5 – 0.5; 4; 90)

This course consists of two parts: theory part and practical part: The theory course consists of 07 chapters with contents as follows: structure, properties and functions of amino acid, protein, enzyme, vitamin, nucleic acid, carbohydrate, lipid in living cell; Metabolism pathways and Bioenergetics in cells: carbohydrate, lipid, amino acid and protein metabolism.

The practical part consists 03 lessons with contents as follows: quantitative reactions used to determine the present of amino acid, protein, vitamin, reducing sugars; Quantitative determination of protein, reducing sugars, total sugars, vitamin C, total organic acid in Agricultural products and food stuffs.

CPE03001.Postharvest physiology and handling of horticultural crops (4: 3-1; 8; 180)

This course consists of 3 main chapters and 5 lessons, focusing on Overview of factors related to quantitative and qualitative losses of horticultural commodities after harvest, including physiological considerations as well as compositional and physical changes occurring during maturation and deterioration. Commercial procedures of harvesting, handling, storage, and marketing horticultural perishables in relation to commodity requirements and responses.

1). Structure of plant products; 2). Measurement of respiration rate of plant products; 3). Measurement of total weight loss of plant products after harvest; 4). Ethylene application in ripening of fruits; 5). Cold storage methods for plant products.

KDE02006. Principles of Management (2TC: 2-0; 4; 90)

This course consists of 7 chapters about Management and Management Theories; Managers vs Leaders vs Entrepreneur; Information and Decision Making; Planning; Organizing; Leading; Controlling.

KDE03000 – Farm management: 3TC (3: 3-0; 6; 135).

This course includes 8 chapters, providing basis knowledge on farm management; Farm production line and production scale; production plan; Farm resource management; Farm production accounting and analyzing; and farm development.

KDE03001. Cooperative and small business management (3: 3-0; 6; 135)

This course consists of 6 chapters, the first about Overview of Cooperatives and small business (SMEs); Evaluate business opportunities of Cooperatives and Small enterprises; Develop a business plan for Cooperatives and SMEs; Financial Management of Cooperatives and SMEs; Marketing Management in cooperatives and SMEs; Human Resource Management in Cooperatives and SMEs.

KTE02013. Microeconomic (3: 3 – 0; 6; 135)

This course consists of 10 chapters, focusing onBrief description of the content: The module deals with the content of opportunity costs and scarcity; Bridge and supply of goods and services; Elasticity of demand and supply; Consumer choice; Cost and production; Maximum profit; Perfectly competitive market; Exclusive market and monopolistic competition; Market inputs; Market failure, government failure and interference.

KTE02014. Macroeconomics (3: 3-0; 6; 135).

This course consists of 10 chapters about the fundamental macroeconomics concepts, the economics model to analyze the problems and issues in the daily life: (1) Introduction to economics study and macroeconomics (2) national income (3) Monetary system (4) inflation (5) open economy (6) economics growth (7) economics fluctuations (8) IS – LM (9) government debt and budget deficit (10) stabilize policies.

MTE04001. Crop Ecology(3: 3-0; 6; 135)

This course consists of 3 main chapters, focusing onHistory of crop ecology and its application in sustainable intensive agriculture; Knowledge on crop ecology including: relationships and interactions between elements of the biophysical environment and the target crops; Knowledge on roles and skills (of stakeholders) in land, water and energy management - and 3 main factors contributing to productivity of the target crops; (3) Some scenarios of future agricultural production in context of population pressure and resource degradation. The basis knowledge will help students to develop ideas for designing sustainable crop system and agronomic solutions to achieve productivity goals whilst fulfilling other important requirement for future agriculture: sustainability of the agroecosystem & human welfare.

NHE02002. Plant Morphology and Anatomy (3: 2 - 1; 6; 135)

This course consists of 9 chapters about Plant cell, Plant tissue, Morphology and Anatomy of Root, Morphology and Anatomy of Stem, Morphology and Anatomy of Leaf, Flower ans sexual reproduction in Flowering plants, Fruit and Seed.

This course also consist of 5 practices: Types of plant tissue, Anatomy of Root, Stem and Leaf in Monocots, Anatomy of Root, Stem and Leaf in Dicots, Morphology of Root, Stem and Leaf, Morphology of Flower, Fruit and Seed.

NHE02003. Plant Genetics (4: 3.5–0.5; 8; 180)

This course consists of 4 main chapters, providing courses provides concepts in molecular genetics (ADN, replication, translation, transcription, gene expression), cytology (chromosome structure, polyploidy, chromosome structure changes and application in agriculture), Mendelian inheritance (principles, segregation ratio, gene interaction and estimated hybridization results), plant reproduction (cell division, incompatibility), population and quantitative genetics (Hardy-Weinberg equilibrium, evolution, phenotypic and genetic variation, genotype, heritability and selection).

NHE02004. Plant Physiology (3: 2 -1; 6; 135)

This course consists of 5 chapters: chapter 1: cell physiology; chapter 2: water exchange in the plants; chapter 3: photosynthesis of higher plants; chapter4: respiration in the plants; chapter 5: Growth and development of the plants.

NHE03002. Plant Breeding (3: 2 –1; 6; 135)

This course consists of 12 chapters about analyze and evaluate the historical process of selecting varieties from domestication of plants to the application of modern biotechnologies; Genetic resources and their application in breeding; Reproductive forms of plants; Application of plant propagation principle, quantitative genetics, molecular genetics and selection theory for crop improvement. The objectives of crop improvement, traditional and modern breeding methods are currently applied in plant breeding.

Practice lessons cover hybridization techniques and trait measurements for selecting plant varieties. Students are also required to participate in projects.

Prerequisite course: NHE02003-Plant genetics.

NHE03003. Plant Pathology (4: 2.5–1.5; 8; 180)

This course consists of 12 chapters, focusing on Basic concepts in plant diseases (plant diseases, plant pathogens, plant disease epidemics, disease control and diagnosis); Common characteristics of the major plant pathogens include fungi, bacteria, viruses, and nematodes; Major diseases of food crops, fruit crops, vegetable crops and industrial crops). Lab works include basic techniques in diagnosis, biological characterization of plant fungi, bacteria, and viruses). Project is survey on disease status and methods of disease management in the field condition.

NHE03004. Entomology and Pest Management(3; 2-1; 6; 135)

This course consists of 10 chapters about Morphology, morphological characteristics of the insects orders; Biological and ecological characteristics; Use natural enemies and pathogens for insects to manage pests; Measures to prevent pests, emphasize IPM measures. The module provides students with specialized insect knowledge on pests primarily on agricultural crops.

NHE03005. Principles of Crop Production in Temperate and Tropical Systems (3: 2.5-0.5; 6; 135)

This course consists of 6 chapters with contents: Overview of Crop Production; Impact of Climatic environment and soil on agricultural production; Crop nutrition; Cropping system and crop establishment; Growth and development; Crop production practices in Temperate and Tropical Systems.

NHE03006. Plant andSociety (3: 2.5–0.5; 6; 135)

This course consists of 6 chapters about 12 lessons and practices 3 lessons. This course will educate the imprtance of botany in ecology and mankind's civilization; Based on relation of food, nutrition and creatures in ecology then apply and exploiteknowledge for sustainable agricultural production and enviromental protection to serve human's life and society.

NHE03007. Principles of Fruit Production (3: 2 - 1; 6; 135)

This course consists of 7 chapters about 10 lessons and practices 5 lessons. This course will educate the imprtance of fruit production in agricultural section and society; Characteristics of morphology and structure of fruit tree. Vegetative and generative growth of fruit tree in connecting with enviroment factors. Management techniques are applied for nursery, establishing a new farm, non-bearing and bearing fruit tree. Harvest and principles of handling system for commercial fruits.

NHE04001. Plant Nutrition (3: 2 – 1; 6; 135)

This course consists of 5 chapters: chapter 1: essential elements and classification; chapter 2: mechanic of the uptake and effects of the environment on rate of uptake, chapter3: Understanding in macro-nutrients and micro-nutrients; chapter 4: Nutrient and resistance to stress conditions; chapter 5: Some laws for using fertilizers.

NHE04002. Weed Science (3; 2-1; 6; 90).

This course consists of 8 chapters about Weeds and Their importance; The ecology of weeds and invasive plants; Weed and Soil; Management methods for cropland and invasive weeds; Introduction to Herbicides; Plant-Herbicide and Soil-Herbicide Interactions; Herbicide Resistance; Herbicide application and practices consist 6 lessons about identifying the common weed in the field; identifying some of the common herbicides; investigating the weed in the upland field; investigating the weed in the lowland field; investigating the seed of weed in the field and evaluating the herbicide use efficiency.

NHE04003. Principles and Practice of Plant Propagation(2: 1.5-0.5; 4; 90)

This course consists of 5 chapters, focusing on The module provides information on the characteristics of seedling production in Vietnam, knowledge of nursery organization, effect of the environmental factors, and the principle of plant propagation. Training skill in plant propagation and the ability to produce high quality of seedling that meet the demand of the market.

NHE04004. Greenhouse and Nursery Crops Production (2: 2- 0; 4; 90)

This course consists of 4 main chapters, focusing onThe current state of greenhouse horticulture. Components of GH environment, GH structure, glazing materials. Environmental factors (light, temperature, humidity) in GH and control of environmental factors (ventilation system, cooling system, irrigation system, lighting), growing media;

plant nutrients, nutrient and pest management. Horticultural crops grown in GH and nursery.

NHE04005. Crop Management System for Vegetable Production (3: 2 – 1; 6; 135)

This course consists of 23 main lecturers, providing with content of introduction on vegetable production in Vietnam, distribution sources and requirement of surrounding conditions for vegetables; basic principles and technical measures in vegetable production and management; vegetable post-harvest treatment, safe vegetables, cultivation techniques of a number of major vegetables.

There are 7 practical lessons with content of recognizing different vegetable seed and seedlings; techniques of sowing and germination, techniques of land preparing, planting and caring vegetables; evaluating growth and development capacities of major vegetables.

Prerequisite course: NHE02004- Plant Physiolygy

NHE04006. Integrated Pest Management (3: 2-1-6; 135)

This course consists of 5 main chapters, providing students with basic knowledge on: Pests, humans and pest management, scientific background of IPM measures, ecosystems and interactions between pests, Measures in IPM, Practice in Establishing and Implementing IPM Programs, Integrated Pest Management of Some Major Pests on Some Important Crops.

NHE04007. Sustainable Farming (2: 1.5 -0.5; 4; 90)

This course consists of 4 chapters about: sustainable farming and its importance, cropping system and its principles; principles of soil tillage in sustainable farming, the models of sustainable farming system in the world and in Vietnam.

NHE04008. Research Methods (2 Credits: 2-0; 4; 90).

This course consists of 6 main chapters, providingthe offers knowledge on significance of research; classification of research; research process; identifying research ideas, research problems, formulation research questions/hypothesis, writing research proposal; Literature review and search for information; basic concepts of research/experimental design and sampling; Writing and publishing research results.

Prerequisite course: THE03001- Applied Statistics in Agricultural Science.

NHE04009. Internship (2: 0 - 2 - 4; 90)

This course focuses onMaking the internship plan; getting to know about the WoWs (internship place): organization framework, scale, working area, infrastructure and materials used for production and business, current situation of crop production, business and manegement of WoWs; learn about the crop production processes applied in internship place; participate in all activities including general and professional activities

(crop cultivation, breeding and seed production, scientific research on crop production...) at WoWs; data collection and treatment; writing report and presenting at student seminar.

NHE04010. Undergraduate Thesis (10: 0– 10; 300; 450)

This course focuses on research proposal; Present research proposal; Design experiments, investigate and collect data; Present study progress; Analyze data, write thesis; Defend thesis. Topics covered in the thesis include areas relevant to effective, safe and sustainable management of crop production.

Prerequisite course: NHE04008 – Research methods.

NHE04011. Sustainable Agriculture (4: 3 – 1; 8; 180)

This course consists of 6 chapters that includes the content of system theory and agriculture system; Definition, characteristics of sustainable agricultural system and methodology to assess the sustainability of an agriculture system; Method to build a sustainable agriculture system; Sustainable management method in agriculture; Different forms of sustainable agricultural systems; Sustainable agriculture research and development.

QLE02001. Principle of Soil Science (3: 2–1: 6; 135)

This course consists of 4 chapters introducing concepts of soil; Factors and processes of soil formation; The physical, chemical, biological properties as well as chemical and nutrient composition of soil; The soil classification systems in the world and in Vietnam. Four practice exercises concern analyzing some physical and chemical properties of soil; and dig, describe the soil profile and observe the effects of soil formation factors on morphology and soil properties.

QLE03001. Plant-Water-SoilRelationships (03:2-1; 6; 135)

This course consists of 6 chapters about Water and water use; Water in the soil; Evaptransipration; Irrigation Scheduling; Irrigation methods; Irrigation system and practices of 05 parts: Determine soil moistrue; Determine ilfiltration; Determine evapotransipration; pratice about Sprinkler and Drip irrigation and filed trip.

Prerequisite course: QLE02001-Principle of soil sicence.

SHE02007. Introduction to Biotechnology (**03: 3–0; 6**; **135**)

This course consists of 14 chapters that divided into two parts. Part A deals with basic techniques such as: gene structure, genome, DNA recombinant technology; DNA replication, transcription and translation processes; principles of DNA, RNA, total protein extraction; cloning; polymerase chain reaction; DNA sequencing; electrophoresis; molecular hybridization; molecular markers; plant tissue culturel protein trafficking; transgenic vectors, direct and indirect transgenic methods; regulatory and expression transgenes in plants. Part B consists of some main applications of plant biotechnology

such as molecular breeding; transformation to create plants have ability to biotic resistance (pests, diseases and viruses stresses) and abiotic tolerance (pesticide, fungicide, herbicide, cold, drought, salinity and submerged stresses); new plant traits (improve quality, biofuels, bioplastic, biofactor); the requirements and policies for transgenic plants.

SHE03005. Applied Bioinformatics (3: 2 – 1; 6; 135)

This course consists of 9 chapters. General introduction of bioinformatics in the direction of application; Biological basis for bioinformatics; Method of searching materials for study and research; Biological database; Identification of nucleotide sequences and sequence registers; Basic search engines and sequence analysis; Genome browser; Analyze genetic relationships, study evolution; Use of tools to exploit the database; Use a combination of tools, software to analyze the data. This course also consists of 6 Exercises aim to assist students in using a combination of tools and software to analyze the data.

SHE03054. Biosafety (2: 2-0; 4; 90)

This course consists of 8 main chapters, focusing onGeneral of biosafety; Laboratory biosafety guidelines; Overview of wide applications of biotechnology and controversies worldwide; Risk assessment and management: principles and procedures; Biosafety assessment of GMOs and their effects to Environment, Human and Animal Health; Tools, methods used in analysis and biosafety assessment of GMOs; International conventions, treaties and agreements on biosafety; Bioethics; Biotechnology and intellectual property rights.

SHE3058. High-tech in Agriculture (2: 2-0; 4, 90)

This course consists of 6 chapters which includeGeneral of High-tech in Agriculture; Farming system in greenhouse; Landless planting technology; Some economic aspects of commercial production; Models of management, operation and development of high-tech agriculture in Vietnam and others countries; Practical model of high tech agriculture.

THE02001. Application of Computer in Agriculture (03: 2-1; 6; 135)

This course consists of 6 chapters: Introduction to computer and information processing; Internet service and information searching; Word processing, making report and printing; Design and manipulating data in a spreadsheet with MS. Excel; Preparing a presentation with MS. PowerPoint; Database management, querying and making report with MS. Access.

THE03001. Applied Statistics in Agricultural Science (**4: 3 – 1; 8; 180**)

This course consists of 8 chapters: Descriptive statistics; Population distributions; Sampling distributions; Statistical inference for a population; Statistical inference for two

populations; One-way analysis of variance; Two-way analysis of variance; Simple linear regression model.

11. LIST OF LECTURERS, ASSISTANTS AND SUPPORTIVE STAFF

List of lecturers and assistants

Course		Responsible Department	Lecturers		
Code	**Name**		**Full name** *(Title, Academic Distinction)*	**Year of Birth**	**Country obtained degree**
CPE02001	General Biochemistry	Department: Biochemistry and food Biotechnology; Faculty: Food Science and Technology	Dr. Nguyen Hoang Anh	1978	Austria
CPE03001	Postharvest Physiology and Handling of Horticultural Crops	Department of Postharvest Technology; Faculty: Food Science and Technology	Assoc. Prof.Nguyen Thi Bich Thuy	1970	
KDE02006	Principle of management	Department of Business Management, Faculty of Accounting and Business Management	Dr. Pham Huong Diu	1978	German
KDE03000	Farm management	Department of Business Management; Faculty of Accounting and Business Management	Dr. Nguyen Quoc Chinh	1962	Philippine
KDE03001	Cooperatives and small business management	Department of Business Management, Faculty of Accounting and Business Management	Dr. Bui Thi Nga	1977	
KTE02013	Microeconomics	Department of Economics; Faculty: Economics and Rural Development	Prof. Nguyen Van Song	1958	Philippine
KTE02014	Macroeconomics	Department of Economics; Faculty: Economics and Rural Development	MA. Nguyen Thu Quynh	1983	Australia
MTE01001	General Chemistry 1	Department of Chemistry; Faculty of Environment	MSc. Le Thi Thu Huong	1986	Vietnam
MTE01002	General Chemistry 2	Department of Chemistry; Faculty of Environment	MSc. Han Thi Phuong Nga	1984	Vietnam
MTE01003	Organic chemistry I	Department of Chemistry; Faculty of Environment	MS. Nguyen Thi Hien	1985	Vietnam
MTE01004	Organic chemistry II	Department of Chemistry; Faculty of Environment	Dr. Nguyen Thi Hong Hanh	1982	Vietnam
MTE04001	Crop Ecology	Department of	Dr. Pham Van		

Course		Responsible Department	Lecturers		
Code	Name		Full name *(Title, Academic Distinction)*	Year of Birth	Country obtained degree
		Agroecology, Faculty of Environment	Hoi		
NHE01001	Nhập môn sinh học 1	BM Sinh học, Khoa công nghệ sinh học	Dr. Nguyen Thi Thuy Hanh	1973	Japan
NHE01002	Introductory Biology 3	Department of Botany Faculty of Agronomy	Dr. Phung Thi Thu Ha	1983	Korea
NHE02002	Plant Morphology and Anatomy	Department of Botany Faculty of Agronomy	Dr. Phung Thi Thu Ha	1983	Korea
NHE02003	Plant genetics	Department of Plant genetics and Breeding, Faculty of Agronomy	Assoc. Prof.Vu Dinh Hoa	1952	Philippine
NHE02004	Plant Physiology	Department of Plant Physiology, Faculty of Agronomy	Assoc. Prof. Pham Van Cuong	1971	Japan
NHE03002	Plant breeding	Department of Plant genetics and Breeding, Faculty of Agronomy	Assoc. Prof.Vu Thi Thu Hien	1975	Japan
NHE03003	Plant Pathology	Department of Plant Pathology, Faculty of Agronomy	Assoc. Prof. Ngo Bich Hao	1956	Vietnam
NHE03004	Entomology and Pest Management	Department of Entomology; Faculty of Agronomy	Assoc. Prof. Dang Thi Dung		Japan
NHE03005	Principles of Crop Production in Temperate and Tropical Systems	Department of Food Crops, Faculty of Agronomy	Assoc. Prof. Nguyen Viet Long	1979	Netherland
NHE03006	Plant and society	Department: Horticulture and landscaping, Faculty of Agronomy	Dr. Vu Thanh Hai	1975	German
NHE03007	Principles of fruit production	Department: Horticulture and landscaping, Faculty of Agronomy	Dr. Vu Thanh Hai	1975	German
NHE04001	Plant nutrition	Department of Plant Physiology, Faculty of Agronomy	Dr. Nguyen Van Phu	1962	Korea
NHE04002	Weed sciences	Department: Cultivation science, Faculty of Agronomy	Assoc. Prof.Nguyen Tat Canh	1958	Vietnam
NHE04003	Principles and practices of plant propagation	Department: Horticulture and landscaping, Faculty of Agronomy	Assoc. Prof. Pham Thi Minh Phuong	1974	Japan
NHE04004	Greenhouse and Nursery Crops Production	Department of Plant genetics and Breeding, Faculty of Agronomy	Assoc. Prof. Vu Dinh Hoa	1952	Philippine
NHE04005	Crop management system for vegetable	Department: Horticulture and landscaping, Faculty of Agronomy	Assoc. Prof. Tran Thi Minh Hang	1971	Japan

Course		Responsible Department	Lecturers		
Code	**Name**		**Full name** *(Title, Academic Distinction)*	**Year of Birth**	**Country obtained degree**
	production				
NHE04006	Integrated Pest Management	Department of Entomology; Faculty of Agronomy	Assoc. Prof. Nguyen Thi Kim Oanh	1955	Vietnam
NHE04007	Sustainable farming	Department: Cultivation science, Faculty of Agronomy	Assoc. Prof. Nguyen Tat Canh	1958	Vietnam
NHE04008	Research methods	Department of Plant genetics and Breeding, Faculty of Agronomy	Assoc. Prof. Vu Dinh Hoa	1952	Philippine
NHE04009	Internship	Faculty of Agronomy	Assoc. Prof. Tran Thi Minh Habg	1971	Japan
NHE04010	Graduation thesis	Faculty of Agronomy			
NHE04011	Sustainable Agriculture	Department: Experiment Design and Biostatictis, Faculty of Agronomy	Dr. Nguyen Thi Ai Nghia	1981	Japan
QLE02001	Principle of Soil Science	Department: Soil science, Faculty of Land Management	Dr. Nguyen Thu Ha	1980	Japan
QLE03001	Plant-Water-Soil Relationships	Department of Water resources; Faculty of Land Management	Assoc. Prof.Nguyen Van Dung	1955	Vietnam
SHE01003	Introductorty Biology 2	Dept. Animal Biotechnology, Faculty of Biotechnology	Dr. Nguyen Huu Duc	1966	Korea
SHE02007	Introduction to Biotechnology	Department: Molecular Biology & Applied Biotech, Faculty of Biotechnology	MSc. Pham Thi Dung	1986	USA
SHE03005	Applied Bioinformatics	Department of Molecular Biology and Applied Bioinformatics, Faculty of Biotechnology	Dr. Nguyen Dưc Bach	1979	German
SHE03054	Biosafety	Department of Plant Biotechnology, Faculty of Biotechnology	Dr. Dinh Truong Son	1979	German
SHE03058	High-tech in Agriculture	Department of Plant Biotechnology, Faculty of Biotechnology	Assoc. Prof.Nguyen Thanh Hai	1980	Russia
SNE01010	English Listening and Speaking 1	Department: Foreign Languages, Faculty of Education and Foreign Languages	MABui Thi La	1980	Swiss
SNE01011	English Reading & Writing 1	Department: Foreign Languages, Faculty of Education and Foreign Languages	Senior Lecturer. Dr. Nguyen Thi Thuy	1964	Australia
SNE01012	English Listening	Department: Foreign	MA. Nguyen Thi	1976	Australia

Course		Responsible Department	Lecturers		
Code	**Name**		**Full name** *(Title, Academic Distinction)*	**Year of Birth**	**Country obtained degree**
	and Speaking 2	Languages, Faculty of Education and Foreign Languages	Kim Que		
SNE01013	English Reading &Writing 2	Department: Foreign Languages, Faculty of Education and Foreign Languages	Nguyen Thi Huong	1990	Vietnam
SNE03002	English for Agronomy	Department: Foreign Languages, Faculty of Education and Foreign Languages	Senior Lecturer. Dr. Nguyen Thi Thuy	1964	Australia
THE01001	Calculus 1	Department of Mathematics, Faculty of Information Technology	Dr. Phan Quang Sang	1981	France
THE01002	Calculus 2	Department of Mathematics, Faculty of Information Technology	Dr. Phan Quang Sang	1981	France
THE01003	Principles of Physics 1	Department of Physics, Faculty of Information Technology	Dr. Nguyen Tien Hien	1981	France
THE01004	Principles of Physics 2	Department of Physics, Faculty of Information Technology	Dr. Nguyễn Tiến Hiển	1981	France
THE02001	Máy tính ứng dụng trong nông nghiệp	BM Khoa học máy tính, Khoa CNTT	Dr. Nguyen Tien Hien	1973	Austria
THE03001	Applied Statistics in Agricultural Science	Department of Mathematics, Faculty of Information Technology	Dr. Nguyen Van Hanh	1983	France

**** List of support staff***

No	Full name		Year of birth	Department	Degree	Position/duties
1	Duong Van	Sáng	1964	Cultivation	Vocational	Technician
2	Vu Thi Chau	Thu	1982	Cultivation	Bachelor	Technician
3	Nguyen Thi Lan	Hương	1980	Plant Pathology	Bachelor	Technician
4	Le Thi Hong	Hanh	1972	Industrial and Medicinal Plants	Bachelor	Technician
5	Le Van	Son	1963	Food crops	Bachelor	Technician
6	Tran Thi Minh	Ngoc	1984	Food crops	Master	Technician
7	Nguyen Thi	Thuy	1966	Entomology	Bachelor	Technician
8	Do Thi	Thanh	1990	Experiment Design and Bioogical Statistics	Bachelor	Technician

No	Full name		Year of birth	Department	Degree	Position/duties
9	Lê Chi	Dân	1957	Plant Genetics and Breeding	Vocational	Technician
10	Nguyen Thi Bich	Hong	1978	Plant Genetics and Breeding	Master	Technician
11	Nong Thi Mai	Phương	1962	Horticulture	Vocational	Technician
12	Nguyen Thi Hai	Ha	1987	Plant Physiology	Bachelor	Technician
13	Nguyen Thi	Thuy	1991	Botany	Non	Service staff
14	Hoang Thi	Hiên	1969	Botany	Bachelor	Technician
15	Dao Vab	Dung	1964	Faculty office	Bachelor	Technician
16	Le Duc	Hung	1959	Faculty office	Bachelor	Technician
17	Tran Thanh	Hai	1983	Faculty office	Bachelor	Service staff
18	Nguyen Thi	Nham	1985	Faculty office	Master	Service staff
19	Tran Thi Van	Anh	1984	Faculty office	Bachelor	Service staff
20	Ngo Thi Bich	Hang	1990	Faculty office	Master	Service staff

12. FACILITIES

12.1 Laboratories

No	Laboratory	Practical lessons	Main equipment
Faculty of Agronomy			
1	Crop Science Lab	- Culturing fungi, bacteria ... - Measuring leaf area, chlorophyll, soil moisture ... - Analysis of total nitrogen and total organic carbon in liquid samples - Precise quantitative and qualitative analysis methods used in biochemistry, chemistry analysis	- Benchtop centrifuges - pH meters - Plant growth chambers - Leaf area measuring equipment - Total Nitrogen - Total Organic Carbon analyzers - SPAD meters - OHAUS electronic scales - Autolaves - Biosafety cabinets - Ovens - Grain moisture meters - Soil moisture meters - Sample cutting tools - Chlorophyll meters - Vortexes/Shakers - UV-VIS spectrometers - Hotplate magnetic stirrers - Dissolved oxygen meters
2	Crop Science Practical Lab	- Visualization and imaging of plant cell anatomy - Visualization for morphology, classification, structure of insects, nematodes, fungi, bacteria ...	- Binocular microscopes - Fluorescence microscopes coupled with digital cameras - Stereo microscopes - Stereo microscopes connected with screens - Binocular microscope connected

No	Laboratory	Practical lessons	Main equipment
			with screens - Laboratory vortexes/shakers - Benchtop centrifuges - OHAUS electronic scale
3	Advanced Crop Science Program Net House	- Conducting scientific research, designing experiments for fundamental research and applied research	- Laboratory racks - Fertilizers - Trolleys - Laboratory pots - Experimental soil - Modern irrigation system
4	Plant Science Lab	- Investigation of plant, protozoa and fungus diversity - Dissection and visulization of vascular plants	- Binocular microscopes - Leaf area measuring equipment - Stereo microscopes - Analytical balances - Multizoom microscopes - Water distillers - Freezers - Fume hoods
5	Plant Science Practical Laboratory	- **Visualization of flowering plant structure, function and evolution** - Dissection and visualization of vascular plants	- Binocular microscopes - Stereo microscopes
6	Plant Physiology Laboratory	- Fast weighting methods for leaf area measurement - Measurement of chlorophyll, light intensity - Tissue culture	- Refrigerated centrifuges - Portable moisture meters - Light intensity meters - Binocular microscopes - Electronic scales - CO_2 and photosynthetic rate measurement system - Sterile cabinets - Leaf area measuring equipment - Ovens - Electrophoresis systems - Laser printers - Soil moisture meters - Moisture meters for agricultural products
7	Plant Physiology Practical Laboratory	- Visualization of plant nutrient deficiency and toxin accumulation - Visualization of mineral metabolism - Fast weighting methods for leaf area measurement	- Binocular microscopes - Electronic scales - Moisture meters for agricultural products
8	Plant Genetics and Breeding Lab	- Determination of germination rate of various seeds - Measurement and preservation of of seed vitality	- Seed germination cabinets - Ovens - Hull peelers - Individual plant plucking machine - Grinders - Polishing machine - Binocular microscopes - Freezers

No	Laboratory	Practical lessons	Main equipment
			- Digital Brix refractometers - Portable Brix refractometers - Electronic scales - Drying cabinets - Grain moisture meters
9	Plant Genetics and Breeding Practical Lab	- Visualization of plant cell division - Practice of conventional breeding methods	- Binocular microscopes - Electronic scales - Grain moisture meters
10	Insect Lab	- Growing insects under controlled temperature and humidity conditions - Making specimens for insect collection and preservation	- Elbantoh insect rearing incubators - Microscopes - Stereo microscopes - Wind speed meters - Light intensity meters - Stereo microscopes connected with screens - Insect growth chambers - Multi-layer insect rearing system
11	Insect Practical Lab	- Visualization of insect morphology - Making specimens for insect collection and preservation	- Microscopes - Stereo microscopes - Digital cameras attached with stereo microscopes
12	Vegetables Lab	- Analysis and measurement of test parameters such as grain moisture, pH, leaf area, sample drying, microscope observation, sample scale, sample incubation, preservation in freezing conditions.	- Ovens - Incubators - Kern electronic scales - Optical magnifying glasses - Brix refractometers - Soil moisture meters - Oxygen meters - pH meters - Binocular microscopes - Ovens - Autoclaves
13	Vegetables Practical Lab	- Grafting - Hydroponic vegetable cultivation	- Plant height meters - Light intensity meters - Leaf area measuring equipment - Binocular microscopes
14	Plant Pathology Laboratory	- Bacteria gram stain test - Culture preparation - Fungi culture, bacterial isolation ... - Sampling and nematode removal	- Laboratory water baths - Freezers - Ovens - Electronic scales - Centrifuges - Culture cabinets - Microscopes
15	Plant Pathology Practical Laboratory	- Observation for morphology, classification, structure of fungi, nematodes, bacteria, plant disease identification - Elisa reaction practice - Infecting plants with pathogen to trigger plant defence reactions	

No	Laboratory	Practical lessons	Main equipment
16	Cultivation Lab	- Growing drug-resistant weeds to search for preventionmethods	- Ovens - Electronic scales - Microscopes - Stereo microscopes
17	Cultivation Practical Lab	- Practicing how to mix, how to spray weed control - Observation for morphology, classification of weeds - Study of different types of weed control	- Microscopes - Stereo microscopes
18	Food Crop Lab	- Plant Physiology Research, analysis of plant protein content, leaf area measurement, photosynthesis rate….	- Spectrometers - Centrifuges - Analytical balances - Benchtop pH meters - Titration systems - Plant water meters - Light intensity meters - Keldahl Protein analysis system - Photosynthesis meters - SPAD meters
19	Research methodology and Bioinformatics Lab	- Experimental design and field data analysis	- Microscopes - Analytical balances - Ovens
20	Industrial Crop Lab	- Determining the ability to accumulate dry matter, soil moisture, grain moisture and a number of agro-biological indicators for industrial crops such as soybean, peanut, tea, coffee. ..	- Electronic scales - Incubators - Ovens - Microscopes - Soil moisture meters - Brix refractometers
Other faculties			
21	Post-harvest Technology Lab (Faculty of Food Technology)	- Analysis of protein residues in vegetables and fruits after harvesting - Post-harvest preservation of vegetables and fruits - Fruit hardness measurement, vegetable color comparison during storage - Observation of pathogenic fungi, bacteria ... on vegetables, fruits.	- Freeze dryers - Freezers - Analytical refrigerated centrifuges - Lipid distillers - Nitrogen distillers - Rotavapors - Viscometers - Food colour testing units - Food hardness testing units
22	Chemistry Practical Lab - (Faculty of Environment)	- Experiments on the quantitative and qualitative properties of gases - Prepare chemicals to demonstrate chemical reactions - Experiments on thermodynamics, equilibrium and quantitative analysis using volumetric method	- Stirrers - LX centrifuges - Electronic scales - Vortexes - Color meters - pH meters - Turbidity meters - Micropipettes - Sample crushers

No	Laboratory	Practical lessons	Main equipment
			- Fume Hoods - Horizontal shakers - GFL water baths- Glassware dryers
23	Physics Practical Lab (Faculty of Information Technology)	- Measuring water surface tension - Exploring free fall and measuring gravity acceleration - Measuring the wavelength of light	- Micrometers, vernier calipers - Water surface tension measuring equipment - Free-fall motion testing instruments and gravimeters - Electronic scales - Optically Pumped Magnetometers - Light intensity meters

12.2. Computer room

STT	Lab	Practical lessons	Main equipment
1	Computer Room - Faculty of Agronomy	Practical modules on experiment design, bioinformatics, biotechnology, internship, thesis writing	Computers, projectors, wifi
2	Computer Room - Faculty of Information Technology	- Practical modules on using laptops, spreadsheets, data management, Word, Excel, modules on applied computer techniques and applied statistics for agriculture	Computers, projectors, wifi

12.3. Library

The program is equipped with 01 reading room at Faculty of Agronomy including 01 large table, 30 seats, books, magazines, theses and dissertations, textbooks, other references.

Luong Dinh Cua library also provides 15 databases, 1.878 journals including Vietnamese and international journals and electronic journals, 9288 documental files for books, text books, journals, theses.... .

Annually, libraries provide various training courses of database searching skills; periodically replenish new materials based on requirement from faculties to ensure sufficient materials for educational purposes; new materials include printed forms (an average of 3,000 titles / 13,000 copies / year) and electronic / digital forms (an increase of 20-29% per annum). In addition, graduate theses and doctoral dissertations are also added, with an average of 1,150 titles per year

Apart from this, students of the advanced program can also access study materials from libraries of other faculties within VNUA such as libraries of Faculty of Economics and Rural Development and Faculty of Accounting and Business Administration ...

12.4. Textbooks, lectures

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
CPE02001	General	Biochemistry. 6th	Cambell, M.K,	Thomson Brooks	2009

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
	Biochemistry		Farrell, S.O		
CPE03001	Postharvest Physiology and Handling of Horticultural Crops	Postharvest Biology and Technology of Horticultural Crops: Principles and Practices for Quality Maintenance	Mohammed Wasim Siddiqui	CRC Press Book	2015
KDE02006	Principle of management	Management textbook	Doan Thị Thu Ha, Nguyen Thi Ngoc Huyen	National Economic University	2009
KDE02006	Principle of management	Decision making through systems thinking	Hans G. Daellenbach and Donald C. McNickle:	University of Canterbury, Christchurch, New Zealand.	2005
KDE02006	Principle of management	Decisions of Principle, Principles of Decision.	Robert Npzick	Princeton University	1991
KDE03000	Farm management	Bài giảng Quản lý kinh tế hộ và trang trại			
KDE03001	Cooperatives and small business management	Great again: Revitalizing America's entrepreneurial leadership	Nothhaft, Henry R	Harvard Business Press	2011
KDE03001	Cooperatives and small business management	Entrepreneurship: A small business approach	Bamford, Charles E	McGraw-Hill/Irwin	2011
KDE03001	Cooperatives and small business management	Sales and Operations for your small business	James B. E, Steven M. B	USA	2000
KDE03001	Cooperatives and small business management	Managing small business, South Western, fourteenth edition, 744p	Moore C		2008
KTE02013	Microeconomics	Principles of Microeconomics. Fouth Edition.	Robert H. Frank and Ben S. Bernanke.	McGraw-Hill/Irwin.	2009.
KTE02013	Microeconomics	Micoeconomics: Principle and Analysis.	Frank A. Cowell.	STICERD and Department of Economics, London School of Economics	2004
KTE02013	Microeconomics	Principles of Microeconomics, 5th Edition.	Mankiw	Cengage Learning	2005
KTE02014	Macroeconomics	Macroeconomics, 8th Edition.	N. Gregory Mankiw	Harvard University, Worth	2013

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
				Publishers	
KTE02014	Macroeconomics	Macroeconomics	John Jackson, Ron McIver, Ed Wilson	McGraw-Hill. 9th edition.	2011
KTE02014	Macroeconomics	Lecture of Principle in Macroeconomics	Nguyen Van Ngoc	Pulisher of NEU	2010
KTE02014	Macroeconomics	Principles of Macroeconomics, 4th edition.	Frank and Bernanke		2009
MLE01001	Basic Principles of Marxism and Leninism 1	Basic Principles of Marxism and Leninism		Pulisher of National Politics, Hanoi	2015
MLE01002	Basic Principles of Marxism and Leninism 2	Basic Principles of Marxism and Leninism		Pulisher of National Politics, Hanoi	2014
MLE01004	Ho Chi Minh Ideology	Lecture of Ho Chi Minh Ideology	Lê Văn Thịnh, Mạch Quang Thắng, Nguyễn Ngọc Cơ, Phạm Ngọc Anh	MOET, Pulisher of National Politics, Hanoi	2011
MLE01005	The details of The Revolutionary guideline of Vietnamese Communist Party	The Revolutionary guideline of Vietnamese Communist Party		Pulisher of National Politics, Hanoi	2015
MTE01001	General Chemistry 1	Chemistry, 9th edition	Steven S. Zumdahl	Houghton Mifflin Company, Boston, New York	2013
MTE01002	General Chemistry 2	Chemistry, 9th edition	Steven S. Zumdahl	Houghton Mifflin Company, Boston, New York	2013
MTE01003	Organic chemistry I	Organic Chemistry, 9th Ed.,	J. McMurry	Cengage Learning	2015
MTE01004	Organic chemistry II	Organic Chemistry, 9th Ed.,	J. McMurry	Cengage Learning	2015
MTE04001	Crop Ecology	Crop ecology: Productivity and Management in Agricultural Systems	LOOMIS Connor, D.J., Loomis, R.S., Cassman, K.G	Cambridge University Press.	2011
MTE04001	Crop Ecology	Developments in crop ecology.	Kropff, M.J, Struik, P.C.	NJAS 50(2).	2002
NHE01001	Introductory Biology 1	Molecular Biology of the Cell, 6th ed.	B. Alberts, A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter	Garland Science (New York)	2015

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
NHE01001	Introductory Biology 1	Biology.	Reece, J, B., Urry, L.S., Cain, M.L., Wasserman, S.A., Minorsky, P.V., Jackson, R.B.	Publisher: Benjamin Cummings	2013
NHE01002	Introductory Biology 3	Botany: An Introduction to Plant Biology 5th Edition. 696 p.	Mauseth, J.D.	Jones & Bartlett Learning;	2012
NHE02002	Plant Morphology and Anatomy	Stern's Introductory Plant Biology 13th edition; 640 p	Bidlack J., Jansky S., Stern K.	McGraw-Hill Education	2013
NHE02003	Plant genetics	Principles of Genetics, Fifth Edition, International Student Version,	Snustad, D. P. And M. J. Simmons	John Wiley & Sons, Inc	2010
NHE02004	Plant Physiology	Plant Physiology	Lincoln Taiz	University of California	2010
NHE03002	Plant breeding	Principles of plant genetics and breeding	Acquaah G	Blackwell Publishing Ltd	2007
NHE03002	Plant breeding	Principle of Plant breeding	Vũ Văn Liết et al	Pulisher of Agriculture	2015
NHE03003	Plant Pathology	Plant Pathology.	Agrios, G.	Elservier. Academic Press.	2005
NHE03004	Entomology and Pest Management	Entomology & Pest Management, 5th edition	Pedigo, L. P. & M. E. Rice	Waveland Press	2014
NHE03004	Entomology and Pest Management	A textbook of Integrated Pest Management. 617p.	Dhaliwal, G.S., Ram Singh & Vikas Jindal.,	Ludhiana: Kalyani Publishers	2013
NHE03004	Entomology and Pest Management	Field Guide for Integrated Pest Management in Hops. Second Edition, 90p.	David H. Gent, James, D.B., Amy J.D., David G.J., Robert P., Douglas B.W.	A Cooperative Publication Produced by Oregon State University, University of Idaho	2010
NHE03004	Entomology and Pest Management	Natural Enemies: An Introduction to Biological Control. UK, 378 pp.	Hajek Ann	Cambridge University Press, Cambridge,	2004
NHE03004	Entomology and Pest Management	Lecture of Biological Control in Plant Protection	Nguyễn Văn Đĩnh, Đỗ Tấn Dũng, Hà Quang Hùng, Phạm Văn Lầm, Phạm Bình Quyền, Ngô Thị	Pulisher of Agriculture	2007

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
			Xuyên		
NHE03004	Entomology and Pest Management	General Entomology 239p	Nguyễn Viết Tùng	Pulisher of Agriculture	2006
NHE03005	Principles of Crop Production in Temperate and Tropical Systems	Principles of Crop Production.	Reddy SR	Kalyani Publisher	2014
NHE03006	Plant and society	Plants and Society.	Estelle Levetin Karen McMahon	McGraw-Hill Higher Education	2015
NHE03006	Plant and society	Lecture "Plant and Society".	Phạm Thị Hương, Vũ Thanh Hải		2014
NHE03007	Principles of fruit production	Fruit production	Trần Thế Tục	Pulisher of Agriculture	2008
NHE03007	Principles of fruit production	Lecture "Principle of fruit production"	Phạm Thị Hương, Vũ Thanh Hải,		2015
NHE04001	Plant nutrition	Mineral Nutrition of Higher Plant. 889 p	Marschner, H.	Academic Press	2011
NHE04002	Weed sciences	Applied Weed Science	Merill A. Ross, Caróle A. Lembi	Prentice Hall	2009
NHE04003	Principles and practices of plant propagation	Plant Propagation Concepts and Laboratory Exercises, Second Edition.	Caula A. Beyl,Robert N. Trigiano	CRC press	2016
NHE04003	Principles and practices of plant propagation	LecturePrinciples and practices of plant propagation	Phạm Thị Minh Phượng		2014
NHE04004	Greenhouse and Nursery Crops Production	Good Agricultural Practices for greenhouse vegetable crops	Food and Agriculture Organization of the United Nations	FAO Plant Production and Protection Paper	2013
NHE04004	Greenhouse and Nursery Crops Production	An introduction to greenhouse production	McMahon, R. W.	Ohio Agricultural Education Curriculum Materials Service	1992
NHE04005	Crop management system for vegetable production	Lecture "Crop management systems for vegetable production	Trần Thị Minh Hằng.		2015.
NHE04005	Crop management system for	Texbook: Vegetable	Tạ Thu Cúc, Hồ Hữu An, Nghiêm Bích	Pulisher of Agriculture	2007.

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
	vegetable production		Hà.		
NHE04005	Crop management system for vegetable production	Handbook of Plant Nutrition	Barker AV, Pibeam DJ	CRC Press	2010
NHE04005	Crop management system for vegetable production	Postharvest Biology and technology of fruits, vegetable, and flowers	Gopinadhan Paliyath	Wiley Blackwell	2009
NHE04006	Integrated Pest Management	Biological Control in Plant Protection	Nguyễn Văn Đĩnh	Pulisher of Agriculture	2007
NHE04006	Integrated Pest Management	Harmful Aninal to Crop Production	Nguyễn Văn Đĩnh	Pulisher of Agriculture	2005
NHE04006	Integrated Pest Management	Pathology in Agriculture	Lê Lương Tề	Pulisher of Agriculture	2007
NHE04006	Integrated Pest Management	General Entomology	Nguyễn Viết Tùng	Pulisher of Agriculture	2006
NHE04006	Integrated Pest Management	Concepts in integrated pest management	Norris, R. F., E. P. Caswell-Chen, and M. Kogan	Upper Saddle River, NJ, Prentice-Hall	2003
NHE04006	Integrated Pest Management	Principle and method of Pest Control in Plant Protection Insects and harmful Animal in Agriculture	Nguyễn Viết Tùng	Pulisher of Agriculture.	2012
NHE04007	Sustainable farming	Crop rotation on organic farms	Charles L. Mohler and Sue	NRAES	2002
NHE04007	Sustainable farming	"Alternative farming techniques for sustainable food production" - In "Genetics, Biofuels and Local Farming Systems, Sustainable Agriculture Reviews"	Padmavathy and Poyyamoli,	Springer Science+Business Media	2011
NHE04007	Sustainable farming	Crop rotation and cover cropping	Seth Kroeck	Chelsea Green Publishing	2011
NHE04008	Research methods	Research Methods, the Basics	Walliman, N.	Routledge, Taylor&Francis Group	2011
NHE04008	Research methods	Research Methodology	Kothari, C.R.	New Delhi: New Age International Limited.	2004
NHE04008	Research	Methods and	Dawson, C.	Oxford	2002

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
	methods	Techniques Practical research methods: a user-friendly guide to mastering research techniques and projects			
NHE04011	Sustainable Agriculture	Agricultural system	Phạm Tiến Dũng and Vũ Đình Tôn	Pulisher of Agriculture	2015
NHE04011	Sustainable Agriculture	Agricultural Ecology	Trần Đức Viên, Phạm Văn Phê và Ngô Thế Ân.	Educaltional Pulisher	2004
QLE02001	Principle of Soil Science	The Nature and Properties of Soils – 14th Edition revised. 975p.	Nyle C. Brady and Ray R. Weil	Pearson,	2012
QLE03001	Plant-Water-Soil Relationships	Irrigarion and drainage	Nguyễn Văn Dung; Ngô Thị Dung; Nguyễn Thị Giang; Vũ Thị Xuân;	Pulisher of Agriculture	2016
SHE01003	Introduction to Biology 2	Intergrated Principles of Zoology	Cleverland P. Hickman Jr	McGraw-Hill. ISBN 9780073524214.	2013
SHE02007	Introduction to Biotechnology	Molecular Biotechnology: Principles and Applications of Recombinant DNA (4th Edition), 850 p.	Bernard R. Glick, Jack J. Pasternak, Cheryl L. Patten	ASM Press Publisher	2009
SHE02007	Introduction to Biotechnology	Molecular Biology of the Gene (7th Edition)	James D. Watson, Tania A. Baker, Stephen P. Bell, Alexander A.F. Gann, Michael Levine, Richard M. Losick	Pearson Publisher, 912 p. ISBN-13: 978-0321762436	2013
SHE02007	Introduction to Biotechnology	Plant Tissue Culture, Development, and Biotechnology (1st Edition) 608 p.	Robert N. Trigiano, Dennis J. Gray	CRC Press	2010
SHE03005	Applied Bioinformatics	Introduction to Bioinformatics	Arthur M. Lesk	Oxford University Press	2014
SHE03005	Applied Bioinformatics	Practical Computing for Biologists. 520p	Steven Haddock, Casey Dunn		2011
SHE03054	Biosafety	Biosafety. 359p	Nguyễn Văn Mùi	Educational Pulisher	2008

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
SHE03058	High-tech in Agriculture	Complete Guide for Growing Plants Hydroponically	Benton Jones	CRC Press	2014
SHE03058	High-tech in Agriculture	Lecture: High-tech in Agriculture	Nguyễn Quang Thạch, Nguyễn Thanh Hải		2015
SHE03058	High-tech in Agriculture	Texbook: Applied Plant Physiology	Vũ Quang Sáng, Phạm Văn Cường, Nguyễn Thị Nhãn, Nguyễn Văn Phú, Mai Thị Tân, Nguyễn Thị Kim Thanh.	Pulisher of Agriculture	2015
SNE01010	English Listening and Speaking 1	Take Away English 2: English for success (Student's Book and workbook with CDs).	Loveday, P., Koop, M., Trowbridge, S., & Scarry, E.	McGraw-Hill.	2012
SNE01011	English reading and writing 1	Take Away English 2: English for success. (Student Book and Workbook)	Loveday, P., Koop, M., Trowbridge, S., & Scarry, E.	McGraw-Hill.	2012
SNE01012.	English listening and speaking 2	Take Away English 3: English for success (Student Book and workbook).	Loveday, P., Koop, M., Trowbridge, S. & Scarry, E	New York: McGraw-Hill ELT (Miguel Angel Toledo Castellanos).	2012
SNE01012.	English listening and speaking 2	Developing Tactics for Listening (2nd ed.).	Richards, J.C	Oxford: Oxford University Press	2003
SNE01013.	English reading and writing 2	Take Away English 3:English for succes (Student Book and workbook)	Loveday, P., Koop, M., Trowbridge, S. & Scarry, E	New York: McGraw-Hill ELT (Miguel Angel Toledo Castellanos).	2012
THE01001	Calculus 1	Calculus for Biology and Medicine (3rd Edition), 840 p.	Neyhauser, C.	Pearson	2010
THE01002	Calculus 2	Calculus for Biology and Medicine (3rd Edition), 840 p.	Neyhauser, C.	Pearson	2010
THE01003	Principles of Physics 1	University Physics with Modern Physics	Yong HD, Freedman RA		2015
THE01004	Principles of	University Physics	Yong HD,		2015

Course code	Course name	Textbooks/Lectures	Author	Publisher	Year of publication
	Physics 2	with Modern Physics	Freedman RA		
THE02001	Application of Computers in Agriculture	General Computer	Phạm Quang Dũng	Pulisher of Agriculture	2015
THE02001	Application of Computers in Agriculture	Microsoft Official Academic Course	Microsoft Office		2013
THE03001	Applied Statistics in Agricultural Science	Applied Statistical Methods in Agriculture, Health and Life Sciences, 799p	Bayo Lawal	Springer International Publishing Switzerland	2014
THE03001	Applied Statistics in Agricultural Science	Introduction to the Practice of Statistics (7th edition), 694p	Moore, DS, McCabe GP, Craig B	W. H. Freeman	2012

Hanoi, 10th May 2017

DEAN OF FACULTY OF AGRONOMY

Assoc. Prof. Tran Van Quang

Hanoi, 16th May 2017

VICE PRESIDENT

Prof. Nguyen Xuan Trach

APPENDIX 1

A MATRIX OF PROGRAM OBJECTIVES AND EXPECTED LEARNING OUTCOMES OF CROP SCIENCE - ADVANCED EDUCATION PROGRAM

Specific program objectives	**Expected learning outcomes**													
	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
PO1	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PO2		x	x	x	x	x	x	x	x	x	x	x		
PO3	x			x	x	x	x	x	x	x	x	x	x	x
PO4	x					x	x	x				x	x	x

APPENDIX 2

BENCHMARK OF EXPECTED LEARNING OUTCOMESFOR CROP SCIENCE - ADVANCED EDUCATION PROGRAM

Notation	EXPECTED LEARNING OUTCOMES: ADVANCED EDUCATION PROGRAM – CROP SCIENCE	EXPECTED LEARNING OUTCOMES OF OTHER PROGRAMS FOR BENCHMARKING	
		Name of program: Crop Science	**Name of program: BSc Plant Science - minor Concepts in Crop Production (http://www.wageningenur.nl/en/Education-Programmes/BSc-Minors/List-of-BSc-minors/BSc-minor-Concepts-in-Crop-Production-WUCCP.htm)**
		Can Tho University	**Wageningen UR**
		Viet Nam	**Netherlands**
I	**Knowledge**		
1.1	**General knowledge**		
ELO1	ELO1: Apply scientific knowledge systems of political sociology and humanities in professional activities and everyday life	Có hiểu biết về các nguyên lý cơ bản của chủ nghĩa Mác – Lênin; đường lối cách mạng của Đảng Cộng sản Việt nam; tư tưởng Hồ Chí Minh; có các kiến thức cơ bản trong lĩnh vực khoa học xã hội và nhân văn phù hợp với chuyên ngành đào tạo; có sức khỏe, đáp ứng yêu cầu xây dựng và bảo vệ Tổ quốc.	
ELO2	ELO2: Apply basic scientific knowledge of plant growth and development in research and crop production.	Có kiến thức cơ bản về toán học, hóa học và sinh học, đáp ứng việc tiếp thu các kiến thức giáo dục chuyên nghiệp và khả năng học tập ở trình độ cao hơn.	Understand the meaning and importance of parameters and concepts in plant and crop growth;
1.2	**Specialized knowledge**		
ELO3	ELO3: Analyze relationships between biological, genetic, physiological, and environmental factors impacting crops	Có kiến thức cơ sở về vi sinh vật, sinh lý thực vật, sinh thái, thổ nhưỡng, di truyền, dinh dưỡng cây trồng;	Demonstrate insight in important interactions between plants and their physical environment that are essential for plant functioning, plant productivity and survival;
			Explain the origins and meaning of water potential in plants and their environment, the soil-plant-air continuum, and the flux of water through plants and its control by stomata and atmospheric water vapour concentration;
			Explain the principles of plant development and flowering and the practical applications of these in production control;
ELO4	ELO4: Develop crop production that brings benefits to the economy	Điều hành quản lý các nông trại, nông trường; lập kế hoạch, đề án và dự án trồng trọt.	
ELO5	ELO5: Evaluate safe, effective, and sustainable crop production and management systems	Có kiến thức chuyên ngành về kỹ thuật canh tác cây lúa, rau, màu, nấm ăn, cây công nghiệp, cây ăn trái; các kiến thức về hệ thống canh tác, chọn giống cây trồng và bảo vệ thực vật; hiểu biết về công nghệ sinh học, bảo quản nông sản sau thu hoạch.	
		Đề xuất các giải pháp khoa học công nghệ trong lãnh vực trồng trọt, cải tiến kỹ thuật canh tác cây trồng.	
II	**SKILLS**		
2.1	**General skills**		
ELO6	ELO6: Develop effective leadership and	Tham gia phát triển mạng lưới khuyến nông, chuyển giao khoa học công	

Notation	EXPECTED LEARNING OUTCOMES: ADVANCED EDUCATION PROGRAM – CROP SCIENCE	EXPECTED LEARNING OUTCOMES OF OTHER PROGRAMS FOR BENCHMARKING	
		Name of program: Crop Science	**Name of program: BSc Plant Science - minor Concepts in Crop Production (http://www.wageningenur.nl/en/Education-Programmes/BSc-Minors/List-of-BSc-minors/BSc-minor-Concepts-in-Crop-Production-WUCCP.htm)**
		Can Tho University	**Wageningen UR**
		Viet Nam	**Netherlands**
	cooperation in teamwork	nghệ trong nông nghiệp.	
ELO7	ELO7: Perform effective communication through speaking, listening, writing and body language		
ELO8	ELO8: Use English effectively in learning, communication, and research of crop science; Achieve B2 level in English or equivalent	Có trình độ tiếng Anh tương đương 350 điểm TOEIC.	
2.2	**Professional skills**		
ELO9	ELO9: Develop crop production models applying advanced processes and technology	Có kiến thức thực tế về sản xuất nông nghiệp thông qua thực tập cơ sở và thực tập giáo trình.	Understand and develop basic simulation models, and to discuss their outcome;
ELO10	ELO10: Conduct research on crop science and production	Có các kiến thức về phương pháp nghiên cứu khoa học, biết thống kê xử lý số liệu nghiên cứu trong trồng trọt.	Give an overview of the qualitative and quantitative methods for regional land use analysis;
ELO11	ELO11: Apply critical thinking in analysis, evaluation, and solving problems in professional fields		Give an overview and explain the role of models within land use design and planning.
III	**Ethics and Attitudes**		
ELO12	ELO12: Express an awareness of lifelong learning ELO13: Possess responsibility and professional ethics	Có phương pháp làm việc khoa học, sáng tạo và luôn tiếp cận với khoa học kỹ thuật tiên tiến trong lãnh vực trồng trọt.	
		Có khả năng tự nghiên cứu khoa học trong lãnh vực trồng trọt để giải quyết các khó khăn, trở ngại trong sản xuất, phát triển và tích lũy kiến thức chuyên môn	
ELO13	ELO14: Follow regulations and legislations on crop production	Có ý thức trách nhiệm công dân, có thái độ và đạo đức nghề nghiệp đúng đắn, có ý thức kỷ luật và tác phong công nghiệp, có khả năng làm việc nhóm.	
ELO14	ELO12: Express an awareness of lifelong learning		

APPENDIX 3

A MATRIX OF COURSES AND EXPECTED LEARNING OUTCOMES

Note: *Number 1-3 is the relationship between course and expected learning outcomes (ELO); 1– None supporting; 2– Supporting; 3 – Highly Supporting*

Knowledge blocks	Course code	Course name		General knowledge		Specialized knowledge			General skills			Professional skills			Ethics and Attitudes		
		English Name	Vietnamese Name	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
General 70 credits (Theory: 63,5; Practice: 6;5)	THE01001	Calculus 1	Toán học 1	1	2	1	1	1	1	2	1	1	1	2	1	2	1
	THE01002	Calculus 2	Toán học 2	1	2	1	1	1	1	2	1	1	1	2	1	2	1
	MTE01001	General Chemistry 1	Hóa học đại cương 1	1	2	1	1	1	2	1	1	1	1	1	2	1	1
	MTE01002	General Chemistry 2	Hóa học đại cương 2	1	2	1	1	1	2	1	1	1	1	1	2	1	1
	THE01003	Principles of Physics 1	Vật lý đại cương 1	1	2	1	1	1	2	1	1	1	1	1	1	1	1
	THE01004	Principles of Physics 2	Vật lý đại cương 2	1	2	1	1	1	2	1	1	1	1	1	1	1	1
	NHE01001	Biological Science 1A	Nhập môn sinh học 1	2	3	1	1	1	2	1	1	1	1	1	3	2	1
	SHE01003	Introductory Biology 2	Nhập môn sinh học 2	1	2	2	1	2	2	2	1	1	2	2	2	1	2
	NHE01002	Introductory Biology 3	Nhập môn sinh học 3	1	3	2	1	1	1	1	1	1	1	2	3	2	1
	MTE01003	Organic chemistry 1	Hóa hữu cơ 1	1	2	1	1	1	2	1	1	1	1	1	2	1	1
	MTE01004	Organic chemistry 2	Hóa hữu cơ 2	1	2	1	1	1	2	1	1	1	1	1	2	1	1
	SNE01010	English Listening and Speaking 1	Listening and Speaking 1	1	1	1	1	1	3	1	3	1	1	1	3	1	2
	SNE01011	English Reading & Writing 1	Reading and writing 1	1	1	1	1	1	3	1	3	1	1	1	3	1	2
	SNE01012	English Listening and Speaking 2	Listening and Speaking 2	1	1	1	1	1	3	1	3	1	1	1	3	1	2
	SNE01013	English Reading & Writing 2	Reading and writing 2	1	1	1	1	1	3	1	3	1	1	1	3	1	2

Knowledge blocks	Course code	Course name		General knowledge		Specialized knowledge			General skills			Professional skills			Ethics and Attitudes		
		English Name	Vietnamese Name	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
	MLE01001	Basic Principles of Marxism and Leninism 1	Những nguyên lý của chủ nghĩa mac - Lenin 1	3	1	1	1	1	1	1	1	1	1	1	1	2	1
	MLE01002	Basic Principles of Marxism and Leninism 2	Những nguyên lý của chủ nghĩa mac - Lenin 2	3	1	1	1	1	1	1	1	1	1	1	1	2	1
	MLE01004	The details of The Revolutionary guideline of Vietnamese Communist Party	Đường lối cách mạng của ĐCSVN	3	1	1	1	1	1	1	1	1	1	1	1	2	2
	MLE01005	Ho Chi Minh Ideology	Tư tưởng HCM	3	1	1	1	1	1	1	1	1	1	1	1	2	1
Foundation Compulsory: 27 credits (Theory: 22.5; Practice 4.5)	QLE02001	Principle of Soil Science	Nguyên lý khoa học đất	1	1	2	1	2	2	1	2	1	1	1	2	1	1
	NHE02002	Plant Morphology and Anatomy	Hình thái, giải phẫu thực vật	1	2	3	1	1	2	1	2	1	1	1	2	2	1
	NHE02003	Plant genetics	Di truyền thực vật	1	1	3	1	1	2	2	3	1	2	2	3	2	1
	NHE02004	Plant Physiology	Sinh lý thực vật	1	3	3	1	2	1	2	1	2	2	2	3	2	1
	KTE02013	Microeconomics	Kinh tế vi mô đại cương	1	1	1	3	2	2	3	1	1	1	2	2	2	1
	SHE02007	Introduction to Biotechnology	Nhập môn Công nghệ sinh học	1	1	3	2	2	2	2	2	1	1	2	3	2	2
	THE02001	Application of computers in agriculture	Máy tính ứng dụng trong nông nghiệp	1	1	1	1	1	1	1	1	2	3	1	3	2	1
	KTE02014	Macroeconomics	Kinh tế vĩ mô đại	1	1	1	3	2	2	3	1	1	1	2	2	2	1

Knowledge blocks	Course code	Course name		General knowledge		Specialized knowledge			General skills			Professional skills			Ethics and Attitudes		
		English Name	Vietnamese Name	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
			cương														
	CPE02001	General Biochemistry	Hóa sinh đại cương	1	1	3	1	1	2	2	1	1	1	2	1	1	1
Major Compulsory: 20 credits (Theory: 13,5; Practice: 6,5)	QLE03001	Plant-Water-Soil Relationships	Mối quan hệ cây trồng-nước-đất	1	1	3	1	2	3	3	3	1	2	3	2	1	1
	THE03001	Applied Statistics in Agricultural Science	Thống kê ứng dụng trong khoa học Nông nghiệp	1	2	1	2	1	1	1	2	2	3	2	2	1	1
	SNE03002	English for Agronomy	Tiếng anh chuyên ngành	1	1	1	1	1	3	3	3	1	1	1	3	1	1
	NHE03002	Plant breeding	Chọn tạo giống cây trồng	1	2	3	1	3	2	2	3	1	3	2	3	3	3
	NHE03003	Plant Pathology	Bệnh cây	1	1	3	1	3	1	1	1	3	3	2	3	3	3
	NHE03004	Entomology and Pest Management	Quản lý dịch hại côn trùng	1	1	3	1	3	3	2	3	3	3	2	3	3	3
Major Elective: 13/28 credits	KDE02006	Principles of management	Quản trị học	2	1	1	3	1	2	2	2	1	1	3	3	3	3
	KDE03001	Cooperatives and small business management	HTX và quản trị doanh nghiệp vừa và nhỏ	1	2	1	1	2	2	2	3	3	1	2	3	3	3
	KDE03000	Farm management	Quản lý nông trại	1	1	1	3	2	2	2	2	3	2	2	3	3	3
	CPE03001	Postharvest Physiology and Handling of Horticultural Crops	Sinh lý sau thu hoạch và bảo quản	1	1	2	3	1	2	2	2	1	2	3	2	3	3
	NHE03005	Principles of Crop Production in Temperate and Tropical Systems	Nguyên lý sản xuất cây trồng trong hệ thống ôn đới và nhiệt	1	2	3	2	3	3	2	3	1	2	3	3	3	3

Knowledge blocks	Course code	Course name		General knowledge		Specialized knowledge			General skills			Professional skills			Ethics and Attitudes		
		English Name	Vietnamese Name	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
			đới														
	NHE03006	Plant and Society	Thực vật và xã hội	1	2	3	1	3	2	2	1	2	2	2	2	2	1
	NHE03007	Principles of fruit production	Nguyên lý sản xuất cây ăn quả	1	2	3	2	3	3	3	1	3	3	2	2	3	3
	SHE03005	Applied Bioinformatics	Tin sinh học ứng dụng	1	1	3	1	1	1	1	2	1	3	3	3	1	1
	SHE03054	Biosafety	An toàn sinh học	1	1	1	1	3	1	1	1	1	3	1	1	3	3
	SHE03058	High-tech in Agriculture	Nông nghiệp công nghệ cao	3	1	2	3	3	2	2	2	3	2	2	2	3	3
Specialization compulsory: 23 credits (Theory: 8; Practice: 15)	MTE04001	Crop Ecology	Sinh thái hệ cây trồng	1	1	3	1	2	2	2	2	2	2	3	3	3	3
	NHE04001	Plant Nutrition	Dinh dưỡng khoáng cây trồng	1	2	3	1	3	2	2	1	2	2	2	2	2	1
	NHE04002	Weed science	Khoa học cỏ dại	1	1	3	1	3	3	2	3	2	3	2	2	2	3
	NHE04008	Research Methods	Phương pháp NCKH	2	2	3	2	1	3	3	3	3	3	3	3	3	3
	NHE04009	Internship	Thực tập nghề nghiệp	2	1	3	3	2	3	3	3	3	3	3	3	3	3
	NHE04010	Graduation thesis	Khóa luận tốt nghiệp	3	1	2	3	3	1	1	3	3	2	3	3	3	3
Specialization Elective: 7/16	NHE04003	Principles and practices of plant propagation	Nguyên lý và thực hành nhân giống cây trồng	1	1	3	2	3	3	3	3	2	3	2	3	3	1
	NHE04004	Greenhouse and Nursery Crops Production	Sản xuất cây trồng trong nhà lưới và ườn ươm	1	s1	3	1	2	3	3	3	3	1	2	3	3	3
	NHE04005	Crop management system for vegetable production	Hệ thống quản lý sản xuất rau	1	1	3	2	3	3	3	3	3	3	3	3	3	3

Knowledge blocks	Course code	Course name		General knowledge		Specialized knowledge			General skills			Professional skills			Ethics and Attitudes		
		English Name	Vietnamese Name	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7	ELO8	ELO9	ELO10	ELO11	ELO12	ELO13	ELO14
	NHE04006	Integrated Pest Management	Quản lý dịch hại tổng hợp	1	2	3	1	3	2	3	3	2	3	2	3	3	3
	NHE04007	Sustainable Farming	Canh tác bền vững	1	2	3	1	2	3	3	3	2	1	3	3	2	2
	NHE04011	Sustainable Agriculture	Nông nghiệp bền vững	1	1	3	1	3	3	3	3	3	1	3	3	3	3

APPENDIX 4: LEARNING ROADMAP