RQ03071: SPECIALIZED VEGETABLE CROPS

1. General information

- Term: 6
- Credits: **Total credits: 2 (Lecture: 1 – Practice: 1) - Self-study: 6.0**
- Credit hours for teaching and learning activities:
  - Lectures: 15 teaching hours
  - Practice in laboratory/greenhouse: 15 teaching hours
- Self-study: 60 hours
- Department conducting the course:
  - Department: Horticulture and Landscaping
  - Faculty: Agronomy
- Kind of the course:

General ☐		Foundation ☐		Specialization 1 ☒		Specialization 2 ☒	
Compulsory ☐	Elective ☐	Compulsory ☐	Elective ☐	Compulsory ☒	Elective ☐	Compulsory ☒	Elective ☐

- Parallel course(s): None
- Prerequisite course(s): None
- Course language: English ☐ Vietnamese ☒

2. Course objectives and expected learning outcomes

**** Course objectives*:**

The course is intended to equip Students:

- Knowledge of growth and development characteristics, requirements for external conditions of key vegetables in the group of leafy vegetables, fruit vegetables and root vegetables grown popularly at home and abroad..
- Skills in developing production processes and applying them to the production of commercial vegetables (leaf vegetables, fruit vegetables, root vegetables) in a safe, sustainable and effective manner.
- Skills in planning and managing vegetable production in a safe, sustainable and effective manner.
- Effective teamwork skills with high spirit and sense of responsibility.
- Understanding and awareness of responsibility to comply with legal regulations on safe vegetable production and environmental protection

**** Course expected learning outcomes***

Program learning outcomes After successfully completing this program, students are able to	**Program Learning outcome's performance criteria**
Professional knowledge	
PLO2. Apply scientific knowledge and cultivation techniques to produce horticultural products to meet market demand.	2.1. Apply crop science knowledge to build high-tech demonstration farms/ advanced procedures for producing horticultural products to meet market demand. 2.2. Apply crop farming techniques to build high-tech demonstration farms/ advanced procedures for producing horticultural products to meet market demand.
Professional skill	
PLO6. Scientific research in the professional field.	6.4. Infer based on accurate scientific conclusions and drawing creative solutions for solving successfully the research problem.

Program learning outcomes After successfully completing this program, students are able to	**Program Learning outcome's performance criteria**
Attitudes	
PLO9. Maintain professional ethics, carry out environmental protection responsibilities and behave in accordance with ethical standards and respect multiculturalism.	9.1. Maintain professional ethics.

3. Course description

RQ03071. General vegetable crops. 2 credits: 1-1-4).

The module consists of 5 chapters, each program presents each main vegetable representing the 3 groups of leafy vegetables (cabbage), fruit vegetables (tomatoes, cucumbers) and root vegetables (potatoes, onions).) with the contents; introduction of nutritional value, economic significance, origin, distribution, classification, requirements for external conditions, planting, care, harvesting and seed production techniques of these vegetables. The module has 5 practical lessons with content on tillage techniques, planting, care, harvesting and assessing the growth and development of cabbage, tomato, cucumber, potato and onion vegetables.

4. Teaching and learning & assessment methods

CELO / **PLO**	**CELO1**	**CELO2**	**CELO3**	**CELO4**
Teaching and learning				
Presentation	x	x	x	
Practice		x	x	x
Field survey				x
Assessment methods				
Rubric 1. Attendance (10%)				x
Rubric 2. Practice (10%)			x	x
Rubric 3. Field survey (20%)			x	x
Rubric 4. Final exam (60%)	x	x		

T

5. Student tasks

- Attendance: All students attending this course must attend school fully and on time
- Prepare for the lecture: All students attending this module must read the textbook and lecture before coming to class.
- Practice: All students participating in this module must attend the required number of practice sessions
- Internship, off-campus practice: All students participating in this module have to conduct field investigations on local vegetable production and consumption.
- Final Exam: Students must take the final exam.

6. Text books and references

**** Text Books/Lecture Notes:***

Giáo trình Cây rau. Tạ Thu Cúc, NXBNN, 2007.

Bài giảng HP Cây rau đại cương. Vũ Quỳnh Hoa, 2020.

**** Additional references:***

+ HC. Wien, H. Stutzel. 2020. The Physiology of Vegetable Crops. CABI Publishing.
+ University of Florida. 2020. Vegetable Production Handbook of Florida.
+ Vu Quynh Hoa, Ngo Minh Hai, Nguyen Duc Huy, Tran Van Quang, Ninh Thi Phip, Bui The Khuynh, Bui Ngoc Tan, Vu Thanh Hai, Nguuyen Duc Khanh, Nguyen Anh Duc, Pham Anh Tuan, Nguyen Van Loc, Tran Duc Vien. 2020. The Vegetable and Flower Production in the Central Highlands of Vietnam: Current Status and Perspective Strategies. Vietnam Journal of Agricultural Sciences.
+ Hai Minh Ngo, Hoa Quynh Vu, Ran Liu, Masahiro Moritaka and Susumu Fukuda 2019. Challenges for the development of safe vegetables in Vietnam: An insight into the supply chains in Hanoi City. Journal of the Faculty of Agriculture, Kyushu University
+ Ngô Minh Hải, Vũ Quỳnh Hoa. 2016. Nhận thức của người tiêu dùng Việt Nam về thực phẩm hữu cơ: Trường hợp nghiên cứu tại thành phố Hà Nội. Tạp chí Khoa học Nông nghiệp Việt Nam.
+ Cẩm nang trồng rau (Vegetable production training manual-AVRDC). Trần Văn Lài và Lê Thị Hà dịch.
+ Gopinadhan Paliyath. 2009. Postharvest Biology and technology of fruits, vegetable, and flowers.
+ Hà Văn Tuyết. 2002. Bảo quản rau quả tươi và bán chế phẩm.
+ PTS. Mai Thị Phương Anh. 2000. Kỹ thuật trồng một số loại rau cao cấp
+ TS Phạm Hồng Cúc. 2001. Kỹ thuật trồng rau
+ Trần Khắc Thi. 2002. Kỹ thuật trồng rau sạch (rau an toàn)
+ Trần Khắc Thi. 2009. Rau ăn lá và hoa (trồng rau an toàn - năng suất - chất lượng cao)
+ Tạ Thu Cúc. 2009. Kỹ thuật trồng rau sạch theo mùa vụ đông xuân
+ Trần Khắc Thi. 2009. Kỹ thuật trồng đậu rau an toàn - năng suất - chất lượng cao
+ Tạ Thu Cúc. 2009. Kỹ thuật trồng rau sạch theo mùa vụ xuân – hè
+ Tạ Thu Cúc. 2009. Kỹ thuật trồng rau sạch theo mùa vụ hè – thu
+ Nguyễn Xuân Giao. 2009. Kỹ thuật làm vườn ở hộ gia đình
+ Lê Văn Tán. 2009. Công nghệ bảo quản và chế biến rau quả

7. Course outline

Week	Content	CELOs
1	***Chapter 1:*** **Cabbage**	
	A/ Summary of the main content in class: 3 hours) Content of theoretical education: (3 hours) 1.1. Nutritional and economic value 1.2. Origin and classification. 1.3. Biological characteristics of cabbage 1.4. The main growth periods of cabbage plants 1.5. Requirements for the external conditions of cabbage plants 1.6. Incubation technique 1.7. Planting and care techniques 1.8. Cabbage breeding techniques ***Content of practical/experimental teaching: (3 hours)*** Practice 1: Techniques of soil preparation, planting cabbage Cabbage care techniques Monitor and evaluate the growth and development of cabbage plants Field investigation: (0.6 hours)	**K1-K4**

	Investigate the situation of cabbage production and consumption and the technical process of cabbage cultivation	
	B/ Contents to be self-study at home: (6 hours) Learn about the new varieties of cabbage currently grown in production and the technical processes of growing cabbage	**K1, K2**
2	***Chapter 2:*** **Tomato**	
	A/ Summary of the main content in class: (3 periods) ***Content of theoretical education: (3 periods)*** 2.1. Nutritional and economic value 2.2. Origin and classification. 2.3. Biological characteristics of tomato plants 2.4. The main growth periods of tomato plants 2.5. Requirements for the external conditions of tomato plants 2.6. Incubation technique 2.7. Planting and care techniques 2.8. Tomato seed production technology Content of practical/experimental teaching: (3 hours) Practice 2: Techniques of soil preparation, planting tomatoes Techniques to take care of tomato plants Monitor and evaluate the growth and development of tomato plants Field investigation: (0.6 hours) Investigate the production and consumption of tomatoes and the technical process of tomato cultivation	**K1-K4**
	B/ Contents to be self-study at home: (6 hours) Learn about new tomato varieties currently grown in production and tomato growing techniques	**K1, K2**
3	***Chapter 3:*** **Potato**	
	A/ Summary of the main content in class: (3 hours) ***Content of theoretical education: (3 hours)*** 3.1. Nutritional and economic value 3.2. Origin and classification. 3.3. Biological characteristics of potato plants 3.4. The main growth periods of potato plants 3.5. Requirements for the external conditions of potato plants 3.6. Introduction of potato varieties 3.7. Planting and care techniques 3.8. Potato breeding techniques Content of practical/experimental teaching: (2 hours) ***Practice 3.*** Techniques of soil preparation, planting potatoes Potato plant care techniques Monitor and evaluate the growth and development of potato plants Field investigation: (0.6 hours) Investigate the production and consumption of potatoes and the technical process of growing potatoes	**K1-K4**
	B/ Contents to be self-study at home: (6 hours)	**K1, K2**

	Learn about new potato varieties currently grown in production and potato growing techniques	
4	***Chapter 4:*** **Cucumber**	
	A/ Summary of the main content in class: (3 hours) Content of theoretical education: (3 hours) 4.1. Nutritional and economic value 4.2. Origin and classification. 4.3. Biological characteristics of cucumber plants 4.4. The main growth periods of cucumber plants 4.5. Requirements for the external conditions of cucumber plants 4.6. Incubation technique 4.7. Planting and care techniques 4.8. Technology of producing cucumber seeds ***Content of practical/experimental teaching: (2 hours)*** Practice 4: Techniques of soil preparation, growing cucumbers Techniques to take care of cucumber plants Monitor and evaluate the growth and development of cucumber plants Field investigation: (0.6 hours) Investigate the production and consumption of cucumbers and the technical process of growing cucumbers	**K1-K4**
	B/ Contents to be self-study at home: (6 hours) Learn about the new cucumber varieties currently grown in production and the technical processes for growing cucumbers	**K1, K2**
5	***Chapter 5:*** **Onion**	
	A/ Summary of the main content in class: (3 periods) ***Content of theoretical education: (3 periods)*** 5.1. Nutritional and economic value 5.2. Origin and classification. 5.3. Biological characteristics of onion plants 5.4. The main growth periods of onion plants 5.5. Requirements for the external conditions of onion plants 5.6. Incubation technique 5.7. Planting and care techniques ***Content of practical/experimental teaching: (2 hours)*** ***Practice 5. Soil preparation techniques, planting onions*** Onion plant care techniques Monitor and evaluate the growth and development of onion plants Field investigation: (0.6 hours) Investigate the production and consumption of onions and the technical process of onion cultivation	**K1-K4**
	B/ Contents to be self-study at home: (6 hours) Learn about the new onion varieties currently grown in production and the technical processes for growing cucumbers	**K1, K2**