PNH03081: SPECIFIC FLOWER AND ORNAMENTAL CROPS

1. Course information

1. Semester: 6
2. Credits: **2 credits (Theory 1 – Practice 1 – Self-study 6)**
   Credit hours for learning activities
   + Theoretical lessons in class: 9 teaching hours (1 session per week, 3 teaching hours per session, 50 minutes each teaching hour)
   + Presentation and discussion in class: 6 teaching hours (2 sessions, 3 periods each, 50 minutes each in the 3rd, 4th or 5th week)
   + Practice in the net house: 15 periods (1 session per week, 270 minutes per session, total 5 weeks)
3. Self-study time: 90 hours
4. Department/faculty:
   - Department of Horticulture and landscaping
   - Faculty of Agronomy
5. Course belong to block:

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

6. Parallel course: None
7. Prerequisites: None
8. Language of instruction: ☐ English Vietnamese ☐x

2. Course objectives and expected learning outcomes

**** Course objectives* :**

- Course aims to provide students knowledge about: floricultural production and consumption in the world and Vietnam; production techniques of traditional ornamental plants, bulbous flowers, main cut flowers, and bedding flowers; off-season flowering techniques applied in floriculture.

- The course trains student skills in propagation techniques, cultivation, care for cut flowers, bulbous flowers, bedding flowers and making plan for small-scale ornamental flower production farm; provide skill to conclude and and solve the problem

- The course gives student an attitude of love for the profession, show a willingness to learn for life; have a sense of initiative, creativity and responsibility at work.

**** 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 (M) 2.2. Apply crop farming techniques to build high-tech demonstration

Program learning outcomes After successfully completing this program, students are able to	Program Learning outcome's performance criteria
	farms/ advanced procedures for producing horticultural products to meet market demand. (M)
Skill	
CDR 6. Scientific research in the professional field.	6.4. Infer based on accurate scientific conclusions and drawing creative solutions for solving successfully the research problem (R)
Attitudes	
CDR 10. Show a willingness to learn for life, an innovative and creative spirit to respond to rapid changes in science and technology.	10.2. Be willing to learn for life when given the opportunity to learn, and to improve knowledge and capacity (R)

3. Course description

PNH03081 (Specific flower and ornamental crops): The course includes the following contents: Production and consumption of flower and ornamental plants in the world and in Vietnam; production techniques of traditional ornamental plants, bulbous flowers, cut flowers, and bedding flowers; off-season flowering control techniques applied in floriculture.

4. Teaching and learning & assessment methods

CELO / **PLO**	CELO**1**	CELO**2**	CELO**3**	CELO4
Teaching and learning				
Lecture	x	x		
Practice			x	x
Presentation	x	x		x
Assessment				
Rubric 1. Attendance (10%)	x	x		
Rubric 2. Practice (20%)			x	x
Rubric 3. Presentation (10%)	x	x		

Rubric 4. Final exam (60%)	x	x		

5. Student tasks

- Attendance and attitude: students must attend all lectures in class and practice.

- Prepare materials before going class (self-study): students must read or prepare materials related to the lesson in class following guidance of teacher.

- Practice and work in group: students have to attend all practical classes, to write reports (individual or in group) following guidance of teacher

- Discussion: Work effectively in a team.

- Final exam: students must complete the final exam in accordance with the Academy's regulations.

6. Text books and references

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

1. John M. Dole and Harold F. Wilkins. 2005. Floriculture Principles and Species. Prentice Hall Inc., Upper Saddle River, New Jersey 07458.

2. Hoàng Minh Tấn, Nguyễn Quang Thạch, Vũ Quang Sáng. 2006. Giáo trình Sinh lý thực vật. Nhà xuất bản Đại học Nông nghiệp Hà Nội (Plant physiology. Hanoi University of Agriculture Publishing house).

3. Nguyễn Thị Kim Lý (2009). Hoa và cây cảnh. Nhà xuất bản Nông nghiệp (Flower and ornamental plants. Agriculture publishing house).

4. Neil O. Anderson (edited). 2007. Flower Breeding and Genetic: Issues, Challenges and opportunities for the 21st Century. Springer.

5. Phạm Thị Minh Phượng. 2020. Bài giảng hoa cây cảnh chuyên khoa. (Specific flower and ornamental crops)

6. Rees, A. R.. 1992. Ornamental bulbs, corms and tubers. Crop production science in horticulture.. Wallingford, Oxon, UK : C.A.B. International. 220 p

6. Tewari, Deepali; Kumar, Ajit; Punetha, Shailaja. 2018. Production technology of vegetables and flowers. New Delhi : Educationist press.

**** Additional references:***.

7. Jiang Qing Hai. 2004. Q&A on flower and ornamental plant cultivation techniques. Volume 2, Techniques for growing outdoor ornamental flowers (Flowering plants). Agricultural publisher.

8. Jiang Qing Hai. 2004. Q&A on techniques for growing flowers and ornamental plants . Volume 3, Techniques for growing flowers and ornamental plants outdoors, shrubs and trees. Agricultural publisher.

3. Pei, Yan,; Li, Yi. 2006. Plant biotechnology in Ornamental horticulture. Binghamton, NY : Haworth Food & Agricultural Products Press. 518 p

7. Course outline

Week	Content	CELOs
1	***Chapter 1.*** **Cut flower, bulbbous flower and bedding flower production and consumption in the world and Vietnam.**	
	A/ / **Summary of content in class***: (2 teaching hours)* **Theoretical teaching content:** 1.1. Production and consumption of cut flower, bulbbous flower and bedding flowers in the world 1.2. Production of cut flower, bulbbous flower and bedding flowers in Vietnam 1.3. The future of cut flower and bedding flower production in Vietnam	CELO1
	B/ **Student self – study:** : *(6 teaching hours)* - Read references and books before going to class - Do home-work	CELO1
2	***Chapter 2.*** **Traditional flower and ornamental crop production**	
	A/ **Summary of content in class** *: (3 teaching hours)* **Theoretical teaching content:** **2.1. Kumquat (** ***Fortella japonica*** **Swingle)** 2.1.1. Origin and classification 2.1.2. Botanical characteristics 2.1.3. Enviromental requirements 2.1.4. Techniques for planting, caring and flowering control **2.2. Peach blossom (** ***Persiaca vulgaris*** **Mill)** 2.2.1. Origin and classification 2.2.1. Botanical characteristics 2.2.2. Enviromental requirements 2.2.3. Techniques for planting, caring and flowering control	CELO1
	B/ **Student self – study**: *(9 teaching hours)* - Read textbook on plant physiology, hand out... - Work in groups, prepare for preseantation - Review the content learned in class	CELO1
2-3	***Chapter*** **3. Cut flower prodution and flowering control techniques.**	
	A/ **Summary of content in class:** *(3 teaching hours)* **Theoretical teaching content:** **3.1 . Chrysanthemum (** ***Chrysanthemum*** **sp.)** 3.1.1. Origin and classification 3.1.2. Environmental requirements 3.1.3. Botanical characteristics 3.1.4. Planting and care techniques 3.1.5. Techniques for flower control and harvest **3.2. Rose (** ***Rosa*** **sp.)** 3.2.1. Origin and classification 3.2.2. Botanical characteristics 3.2.3. Environmental requirements	CELO1, CELO2, CELO3, CELO4

	3.2.4. Planting, caring, harvesting and flower control techniques. **Content of the seminar/discussion:** *(2 teaching hours)* - Presentation on the following topic: + Present a proceduce of rose/chrysanthemum/production and caring in the Red river delta. + Prepare a project/plan to develope rose/chrysanthemum production farm in Mocchau, Sonla. ... **Practical/experimental teaching content:** Lesson 1. Chrysanthemums propagation by cutting method 1.1. Propagate chrysanthemum by cutting 1.2. Take care cutting in nursery stage 1.3. Transfer seedling to the field Lesson 2. Take care chrysanthemum plant in the field and monitor some plant growth and development indicators Lesson 3. Chrysanthemum plant height and flower control.	
	B/ Student self – study: (*9 teaching hours*) - Read references and books before going to class - Review the content learned in class	CELO2
4	***Chapter 4.*** **Bulbous plant production: Lilies (** ***Lilium*** **sp.)**	
	AA/ **Summary of content in class:** *(2 teaching hours)* **Theoretical teaching content:** 1. Origin and classification 2. Botanical characteristics 3. Enviromental requirements 4. Techniques for planting, caring, controlling flowering and harvesting **Practical/experimental teaching content** Lesson 1. Hippeastrum propagation by cutting Lesson 2: Take care for hippeastrum seedling in nursery Lesson 3. Take care of hippeastrum in the garden and monitor some growth indicators. Flowering control	CELO 1, CELO3, CELO4
	B/ **Student self – study**: *(12 teaching hours)* - Read references and books before going to class - Review the content learned in class	CELO1
5	***Chapter 5*** **. Bedding flower production**	
	A/ **Summarize the main content in class: (** *3 teaching hours)* **Theoretical teaching content:** *(2 teaching hours)* 5.1. Introduction of bedding flowers 5.2. General principles of planting beddding flowers 5.3. Planting techniques of petunia, marrigold, salvia.... **Content of practical/experimental teaching:** *(6 hours)* Lesson 1. Techniques for sowing flower seeds in potting trays Lesson 2. Technical measures to take care of seedlings in the nursery (weeding, fertilizing, watering...) Lesson 3. Taking care of seedlings in the production garden stage and technical measures to control flowering	CELO1, CELO3, CELO4

	***B/* Contents that need to be studied at home** : *(6 teaching hours)* - Review the content learned in class	CELO 1