



Jordan University of Science and Technology
Faculty of Agriculture
Plant Production Department

PP724 Advanced Floriculture
Second Semester 2022-2023

Course Catalog
3 Credit Hours. Floral initiation, induction, and development. Hormonal aspects of flowering. Effect of light, photoperiod, temperature, nutrition, and growth regulators on flowering. Flower abnormalities. Physiological basis of flowering in major flowers, pot plants, and bulbous plants. Plant and floral morphology, genetic information related to flowering, juvenility, and plant age.
Teaching Method: On Campus

Text Book	
Title	The Physiology of Flowering. Vol. I. The initiation of flowers.
Author(s)	1. Bernier, G, J. Kinet, and R. Sachs.
Edition	1st Edition
Short Name	Ref#1
Other Information	CRC Press, Inc. USA. Chapters 1, 3, 5, 7.

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	The Physiology of Flowering. Vol. II. Transition to reproductive growth.	2. Bernier, G, J. Kinet, and R. Sachs.	1st Edition	CRC Press, Inc. USA. Chapter 6.
Ref#3	Introduction to Plant Physiology	3. Hopkins, W.G. and N.P. H?ner	3rd Edition	John Wiley and Sons. Chapters 3, 17.
Ref#4	Plant Physiology	4. Taiz, L. and E. Zeiger.	7th Edition	Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts, USA. Chapter 24.

Ref#5	The Physiology of Flowering Plants	6. H. O. Pik and S. A. Rolfe	4th Edition	Published in the United States of America by Cambridge University Press, New York
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Instructor	
Name	Prof. Maher Tadros
Office Location	C4L2
Office Hours	Sun : 08:00 - 10:00 Mon : 08:00 - 10:00 Tue : 09:00 - 10:00 Wed : 09:00 - 10:00
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Class Schedule & Room	
Section 1: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: LAB	

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Chapter 1: Fundamentals of Floral Development Floral Initiation: The transition from vegetative to reproductive growth Environmental and endogenous signals triggering floral initiation Floral Induction: The process of flower development Hormonal and genetic control of floral induction Floral Development: The stages of flower development, from bud formation to anthesis Cellular and molecular mechanisms underlying floral development	From Ref#1 , From Ref#2 , From Ref#3 , From Ref#4
Weeks 2, 3, 4	Chapter 2: Hormonal Regulation of Flowering Role of Plant Hormones: Auxins, gibberellins, cytokinins, abscisic acid, and ethylene Their influence on floral initiation, development, and senescence Hormonal Interactions: Synergistic and antagonistic effects of hormones on flowering Hormonal signaling pathways regulating floral development	
Weeks 5, 6, 7	Chapter 3: Environmental Factors Affecting Flowering Light: Photoperiodism and its impact on flowering Photoreceptor pigments and their role in light perception Light quality and intensity effects on flowering Temperature: Thermoperiodism and its influence on flowering Temperature requirements for different floral crops Nutrition: Nutrient deficiencies and excesses affecting flowering Macronutrients and micronutrients essential for floral development Growth Regulators: Exogenous application of plant growth regulators to manipulate flowering Practical applications in commercial floriculture	
Weeks 7, 8	Chapter 4: Flower Abnormalities and Disorders Physiological Disorders: Bud blast, petal blight, and other physiological abnormalities Environmental and nutritional factors contributing to disorders Genetic Abnormalities: Floral mutations and their impact on flower morphology and development Genetic engineering techniques to modify floral traits	

Weeks 9, 10	Chapter 5: Physiological Basis of Flowering in Major Crops Flowering in Major Flowers: Roses, carnations, lilies, and other cut flower crops Physiological mechanisms underlying flowering in these crops Flowering in Pot Plants: Orchids, bromeliads, and other pot plant crops Environmental and hormonal factors influencing flowering Flowering in Bulbous Plants: Tulips, daffodils, and other bulbous crops Vernalization, photoperiodism, and temperature requirements for flowering	
Weeks 11, 12	Chapter 6: Plant and Floral Morphology Plant Morphology: Vegetative and reproductive structures of flowering plants Shoot and root development, leaf morphology, and floral organs Floral Morphology: Flower parts and their functions Floral symmetry, flower types, and inflorescences	
Weeks 13, 14, 15	Chapter 7: Genetic Basis of Flowering Genetic Control of Flowering: Genes involved in floral initiation, development, and senescence Genetic pathways regulating flowering time Juvenility and Plant Age: The concept of juvenility and its impact on flowering Genetic and physiological factors controlling plant aging and senescence Genetic Engineering and Biotechnology: Application of genetic engineering techniques to improve flowering traits Development of transgenic plants with modified flowering characteristics	From Ref#1, From Ref#2, From Ref#3, From Ref#4, From Ref#5

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Demonstrate an understanding of the physiological basis of flowering in major flowers, pot plants, and bulbous plants.	15%	
Analyze and interpret plant and floral morphology, including the identification of key structural features and their significance in the context of flowering.	15%	
Evaluate genetic information related to flowering, including the role of genes and genetic factors in controlling flowering time and flower development.	10%	
Explain the concepts of juvenility and plant age, and their influence on flowering in different plant species.	10%	
Describe the process of floral initiation, induction, and development, including the key stages and regulatory mechanisms involved.	10%	
Analyze the hormonal aspects of flowering, including the role of plant hormones in regulating floral development and flowering time.	15%	
Assess the effect of light, photoperiod, temperature, nutrition, and growth regulators on flowering, and explain their impact on flower initiation and development.	10%	
Identify and analyze flower abnormalities, including the causes, symptoms, and potential solutions for common abnormalities observed in floral development.	10%	

Relationship to Program Student Outcomes (Out of 100%)						
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7

Policy	
Attendance:	All students are expected to attend every class meeting, scheduled lectures, online activities, and exams on time. Attendance is taken at all lectures. Failure to attend can result in a student being dismissed from the course with a failure score (F) if the absent percentage exceeded 20% of the total number of lectures in the semester. Students who miss any lecture are personally responsible for learning any missed materials or assignments, either from their classmates or from the course eLearning site. Two tardy arrivals will count as one absence.
Examination:	First, second and final examinations must be given at the time specified by admission and registration unit in the university. This applies for all examinations, whether an on-campus or an online exam. No changes in examination dates. No make-up examinations except with official medical reports approved by the dean of the faculty of agriculture. The instructor can verify the identity of the students in the exam room by requesting student university ID. If a student is unavoidably absent from any examination, university regulations will be applied. Graded exams will be given back to students and the questions will be answered and discussed with the students in class or online.
Cheating, Plagiarism and Academic Dishonesty:	Any student who attempts to cheat will be asked to hand over the exam immediately and will be reported to the department head. The case will be handled in accordance with the university's regulations, which include disciplinary penalties as well as the possibility of failure in the course and/or dismissal from the University. Students are expected to complete their assignments themselves. Any kind of plagiarism is prohibited. The university's regulations also apply if there is academic dishonesty and plagiarism of assignment during the course.
Class participation:	Participating in classroom discussion, online discussions, or any type of collaborating in various forms such as forming study groups, helping your classmate with studying are highly encouraged. A student who actively participates in class discussion may receive up to 2% bonus added to the final grade.
Electronic devices:	Electronic devices of any kind (smartphones, tablets, or laptops) must be turned off (without vibration or even silent mode), they should not be seen in the students hands, and they should not be tampered with during class. As an exception, these devices may only be triggered when indicated and used only for illustrative purposes during the teaching process. If you fail to comply with this policy, you will be dismissed on that day and you will be recorded as absent for this class.
Course withdrawal:	Students can only formally withdraw from classes by submitting the online withdrawal form available on the student services portal or at the registration unit according to the university regulations.

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