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**Department of Horticulture**

**College of Agriculture**

**University of Salahaddin**

**Subject: Nursery Technology and Management**

**Theory Lecturer's name: Media Izaddin MohammedAmin**

**Practice Lecturer's name: Bayan Rukan**

**Course Book for 2nd Year Students**

**Course Level:  Undergraduate**

**Academic Year: 2022-2023**

**Course Book**

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| **1. Course name** | **Spring Semester** |
| **2. Lecturer in charge** | **Dr. Media I.MuhammedAmin** |
| **3. Department/ College** | **Horticulture/Agriculture** |
| **4. Contact** | **e-mail:**  |
| **5. Time (in hours) per week**  | **Theory: 2** **Practical: 3**  |
| **6. Office hours** |  |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | [**http://119.13.111.19/profile-admin/index.php?p=teaching**](http://119.13.111.19/profile-admin/index.php?p=teaching) |
| **9. Keywords** | Nursery, Nursery management, plant propagation, green houses, media preparation, nursery technology …. Etc. |
| **10. Course overview:**  It is a theoretical and very practical plant propagation and plant nursery management course. Plants are a very important part of a permaculture designed, cultivated ecosystems as they are needed in very large numbers. By growing plants in the plant nursery, their cost can be greatly reduced. And if the plants are grown from plant material collected from the property or the local area, cultivars that are adapted to local conditions can be the result. By participating in this course, the students will be able to start successfully propagating plants within the plant nursery environment.  |
| **11. Course objectives:** This course aims to develop a basic understanding of the principles of nursery management, plant propagation, an overview of propagation techniques, a general knowledge of the methods of propagation of the more commonly cultivated plants, the basic knowledge on entrepreneurial skills required to run a small scale commercial nursery and technologies used in nursery. |
| **12. Student's Duties & obligation**The media often focuses on a lecturer’s role in making sure that students obtain a quality education. While lecturers do have a strong impact on the learning process, students also have obligations to their lecturers, their classmates and themselves. By fulfilling their fundamental duties, students can contribute to a positive learning experience for everyone in the classroom.**Attendance**Students should make every effort to maintain good attendance in their classes. Illnesses and emergencies do occur, so it may not be possible to show up every time. Nevertheless, students should do their best to consistently attend their lectures and get there before class begins. Missing college can lower attendance grades and result in missed quizzes or assignments. If a student misses a class, it is their responsibility to ask for a friend’s notes and talk to the lecturer to determine whether an important announcement was made.**Participation**Each student should participate in the classroom. Discussing relevant subjects at appropriate times can spark new conversations and produce valuable debates. If lecturer ask students to share thoughts with their respective groups, each student should contribute to the assignment. Students who are shy do not have to take a leadership role, but they can offer to take notes and add a few ideas.**Questions**Asking questions about nursery management and methods of propagating plants is an important part of the classroom experience. It is not uncommon for students to have similar difficulties, so speaking up will help everyone understand the discussed information. Lecturers can also benefit from a student’s questions. By finding out what subjects are hard to understand, lecturers can adjust his/her lectures to clear up confusing topics.**Respect**Students need to respect the ideas and opinions of their classmates in and outside of the classroom. They should not ridicule someone for having a different viewpoint, and they should be willing to listen to alternative perspectives. Students can debate the merits and drawbacks of diverse viewpoints as long as it is done in a constructive manner. Not everyone will agree, but listening to new ideas can help people develop their thoughts and see subjects in a new light.**Preparation**Lecturers expect students to study outside of the classroom. Students should complete assigned reading before class begins, so they can contribute their thoughts to new discussions. Working on assignments during a lecture can distract other students and interfere with a lecturer’s lesson plan. Students who attempt to work during class may also miss out on valuable information.  |
| **13. Forms of teaching**The course would be taught through lectures, demonstrations (White board presentation) , LCD power point presentation and video show |
| **14. Assessment scheme**Lecture and SeminarTheoretical part (Two exams: 15% and final exam 50%) ‌ |
| **15. Student learning outcome:**

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| At the end of this learning module, students must able to demonstrate a:1. basic knowledge and understanding of:
2. management of nursery.
3. Basic safety requirements related to the propagation environment and procedures.
4. Basic hygiene requirements for the propagation environments.
5. Growing media - wet and dry.
6. Weeds, pest and diseases.
7. Technologies used in nursery to facilitate nursery production.
8. The purpose of learning about plant propagation.
9. All procedures, legislation, rules and codes of conduct pertaining to plant propagation.
10. All procedures related to the propagation of plants.
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| **16. Course Reading List and References‌:*** Text books
* In-class lectures and workshops developed by instructor that relate to the:
* specific topic to be covered
* Library resources
* On-line references provided by instructor
* Field trip greenhouse resources

**Suggested Reading**: Plant nursery management (principles and practices) (2014) P.Ratha Krishnan et al.PLANT PROPAGATION AND NURSERY MANAGEMENT (2004)[R. R. Sharma](https://www.amazon.com/Dr.-R.-R.-Sharma/e/B001ICKOCS/ref%3Ddp_byline_cont_book_1)PLANT PROPAGATION principles and practices ,8th ed. (2011) by HARTMANN and KESTER.MODERN NURSERY MANAGEMENT (2011) by [R.L. Bhardwaj and D.K. Sarolia](https://www.abebooks.com/servlet/SearchResults?an=R.L.+Bhardwaj+and+D.K.+Sarolia&cm_sp=det-_-bdp-_-author)Agrotechnology Manual: Including Nursery Management and Practices (2014), Marcel N Etomes.A Handbook for Skill Development Nursery Management of Horticultural Crops Kindle Edition. (2019). [Deepa H. Dwivedi](https://www.amazon.com/s/ref%3Ddp_byline_sr_ebooks_1?ie=UTF8&field-author=Deepa+H.+Dwivedi&text=Deepa+H.+Dwivedi&sort=relevancerank&search-alias=digital-text) and [Navaldey Bharati](https://www.amazon.com/s/ref%3Ddp_byline_sr_ebooks_2?ie=UTF8&field-author=Navaldey+Bharati&text=Navaldey+Bharati&sort=relevancerank&search-alias=digital-text).* Plant Propagation and Nursery Management (2019).Krishi Shiksha and TNAU.
* Plant Propagation and Nursery Management (2020). [Tarai Ranjan Kumar](https://www.amazon.com/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&field-author=Tarai+Ranjan+Kumar&text=Tarai+Ranjan+Kumar&sort=relevancerank&search-alias=books) , 2020

Essentials of Plant Nursery Management 2nd Edition (2020) [P.K. Ray](https://www.google.iq/search?hl=ar&tbo=p&tbm=bks&q=inauthor:%22P.K.+Ray%22), **Suggested readings:**1. Plant Propagation Principles and Practices (1990)
2. Crop Production Science in Horti Tropical Fruits (1999)
3. Fruit Growing (2003)
4. Horticulture ATA Glance (2005)
5. Vegetable Gardening (2005)
6. Basics of Horticulture (2010)
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| **17. The Topics:** | **Lecturer's name:****Dr.Media I. Muhammed-Amin** |
| **1st week Nursery** * Definition,
* Importance,
* Guidlines of Nursery raising,
* Components of a Good Nursery
* the need for modern nursery
* layout of nursery
* Financial Resources for Nursery

 **2nd week** * Inputs to Nursery
* Basic characteristics of mother plant
* Maintenance of mother plants
* Mother Bed
* Types of mother beds

**3rd week** * Plant Propagation Structures
* Seed or Sexual Propagation
* Advantages of Sexual Plant Propagation
* Disadvantages of Sexual Plant Propagation
* Factors affecting Germination
* **4th week Plant Propagation:**
* Vegetative or Asexual Propagation I
* Advantages
* Disadvantages
* Vegetative propagation Methods

A) Natural vegetative propagationB) Artificial vegetative propagation* **5th week** (first examination)

**6th week*** Management Practices in Horticulture Nursery
* Sanitation,
* Drainage,
* Training and Pruning in Nursery
* Potting, Re-Potting, De-potting

and Mulching in Nursery* Packing and Transport of Nursery Plants

**7th week** * Environmental Factors Affecting Plant Growth
* Stages in Plant Growth
* The most important environmental factors
* Temperature
* Moisture supply
* Radiant energy
* Composition of the atmosphere
* Soil aeration and soil structure
* Soil reactions
* Biotic factors
* Supply of mineral nutrients
* Restricting/limiting substances

**8th week** * Plant Growth Media Used in Nursery
* Difinition
* Properties of good growth Medium
* Classification of Plant Growth Media
* Soil Media
* Soilless Media

**9th week (**2nd Examination)* Technology facilities in Nursery
* The Farm of the Future in contact with Farm Robots
* Nursey records
* Types of records
* Planning and Scheduling of Nursery Activities

**10th week** * Plant problems – Diseases, Pests, Weeds

**11th week** * Greenhouse Management
* Marketing/Business management
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| **18. Practical Topics**  |  |
| 1. Identification of Garden Tools
2. Nursery design and layout
3. Types of Nurseries
4. Protected houses
5. Common growing media in nursery
6. Plant Propagation
7. A. Sexual Propagation
8. B. Asexual Propagation
 | **Lecturer's name:****Miss. Bayan Rokan**(3 hrs.) |
| **19. Examinations:*****1. Compositional:*** In this type of exam the questions usually starts with Explain how, What are the reasons for…?, Why…?, How….?***For example:**** What is the reason behind the following: -
* What are the advantages and disadvantages of ( )
* Identify and explain two problems that might occur as a result of the use of (…….)
* List three ways of ( )

***2.******True or false type of exams:***In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided***For instance:**** Fill in the blanks with suitable terms:
* Correct the underlined parts if they are false:
* Put (T) for true statement and (F) for false statement then correct the mistakes.
* Compare ( ) with ( )
* Draw distinctions between ( ) and ( )

***3. Multiple choices:***In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.***For example:***Identify the choice that best completes the statement or answers the question. ***4. Another styles of Questions may serve students:**** Define following terms?
* Draw a scheme or picture of ( )
* Describe two types of ( )
* Describe three different practices that can be used to ( )
* Match the words in column A with the related /suitable words in column B.
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