

Ministry of Higher Education and Scientific research



Department of Forestry

College of Agricultural Engineering Sciences

Salahaddin University-Erbil

Subject: Forest Nursery- Theory & Practice

Course Book: Third Stage

Lecturer's name (Theory): Dr. Sherzad Omar Hamad

(Lecturer)

Lecturer's name (Practice): M. Rushdy Rokan

(Assist Lecturer)

Academic Year: Fall Semester 2022-2023

Course Book

1. Course name	Forest Nursery- Theory and Practice
2. Lecturer in charge	Dr. Sherzad Omar Hamad M. Rushdy Rokan
3. Department/ College	Forestry / Agricultural Engineering Sciences
4. Contact	E-mail: sherzadomer@ymail.com E-mail: sherzad.hamad@su.edu.krd E-mail: E-mail :
5. Time (in hours) per week	Theoretical: 2 Practical: 3
6. Office hours	Sunday to Wednesday or make appointment
7. Course code	
8. Teacher's academic profile ➤ (Dr. Sherzad Omar Hamad)	I completed my B.Sc. in Salahaddin University – Agriculture college – Plant Production Department in 2005. I got M.Sc. in Salahaddin University – Agriculture college – Forestry and Horticulture department in 2010 and my specialize is Silviculture. I completed my PhD. in Universiti Putra Malaysia in 2017. Currently, I am working as Lecturer in Forestry Department - Agriculture college, Salahaddin University.
➤ M. Rushdy Rokan	

9. Keywords

10. Course overview:

One of the most important subjects in forestry is Nursery which is defined as a managed site, designed to produce seedlings grown under favourable conditions until they are ready for planting. All nurseries primarily aim to produce sufficient quantities of high quality seedlings to satisfy the needs of users. So, nursery play significant role in afforestation, reforestation, and forest rehabilitation programmes because it provides a high numbers of good quality seedlings to meet the plantation demands.

11. Course objective:

➤ Theoretical Part:

1. Introduce students to the definition, importance and types of nursery.
2. Enable students to identify how to establish a good nursery.
3. Students have to get information about all processes that carry out in the nursery to produce seedlings either from seed or vegetative propagules.

12. Student's obligation

Students will be asked to prepare research papers on selective topics. There will be classroom discussions and the lecture will give enough background to evaluate problems sets, and different issues discussed throughout the course. To get the best of the course, it is suggested that students attend classes as much as possible, read the required lectures, teacher's notes regularly as all of them are foundations for the course. Try as much as possible to participate in classroom discussions, preparing the assignments given in the course. Using quiz, exams.

In conclusion, the student must attend the classes and prepare themselves for the test, assignment reports, quizzes and exams.

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: 'power point presentations for the head titles, definitions and summary of the lecture; the students can get a copy of a lecture; the white board also be used to clear the figures and meaning of words; to more clear the lectures some animations and videos will be shown. In practical part, the student will be brought to the nursery to identify nursery structure and components and establishment conditions, the students also will be learnt to how produce and propagate a satisfactory quantity and quality of different species of forest tree seedlings either by sexual and asexual methods.

14. Assessment scheme

Grading: This subject includes theoretical and practical parts

	First exam	Second exam	Quiz, activity and report	Annual average	Final exam	Total
Theoretical part	5	5	5	15	50	
Practical part	12.5	12.5	10	35	0	
				50	50	100

15. Student learning outcome:**In Theoretical part:**

The students will get the scientific information about Nursery aspects which include definition, importance and establishment of nursery. The student also can enhance their knowledge about plant propagation techniques that play important

role in development of the forest. The above information helps the students to be able to establish a nursery and produce sufficient quantity and quality of different kind of seedlings.

16. Course Reading List and References:

- Clifford, Isaac (2020). *Plant Propagation for Beginners: The Complete Guide On How to Create New Plants for Free*. Amazon Digital Services LLC - KDP Print US
- Davies Jr, F. T., Geneve, R. L., Wilson, S. B., Hartmann, H. T., & Kester, D. E. (2017). *Hartmann & Kester's plant propagation*. Pearson.
- Duryea, M. L., & Landis, T. D. (Eds.). (2012). *Forest nursery manual: production of bareroot seedlings* (Vol. 11). Springer Science & Business Media.
- Munjuga, M. R., Gachuri, A. N., Ofori, D. A., Mpanda, M. M., Muriuki, J. K., Jamnadass, R. H., & Mowo, J. G. (2013). *Nursery management, tree propagation and marketing: A training manual for smallholder farmers and nursery operators*. Nairobi: World Agroforestry Centre.
- Shepherd, K. R. (2012). *Plantation silviculture* (Vol. 22). Springer Science & Business Media.
- Singh, V. and Lavania, S.K. (2003). *Forest Tree seeds and Nursery Management*. Bishen Singh. Indian.
- Toogood, Alan (2019). *Propagating Plants How to Create New Plants for Free*. DK publishing
- Varshney, A., & Anis, M. (2014). *Trees: Propagation and Conservation: Biotechnological Approaches for Propagation of a Multipurpose Tree, Balanites aegyptiaca Del*. Springer Science & Business Media.

Arabic References:

- السيد ، عبدالوهاب بدر الدين (1993). بذور الاشجار الخشبية و انتاج شتلاتها. كلية الزراعة. جامعة الاسكندرية
عبدالله , ياووز شفيق و الكنانى ، عادل (1985) مشاتل الغابات. كلية الزراعة و الغابات. جامعة الموصل.
عبدالله , ياووز شفيق (1984). بذور اشجار الغابات . كلية الزراعة و الغابات. جامعة الموصل.

17. The Topics: Theoretical Topics		Lecturer's name
First week	<ul style="list-style-type: none"> - What is nursery - Importance of nursery - Type of nursery (Classification of nursery) - Structure of a typical nursery 	Dr. Sherzad Omar Hamad (2 hrs)
Second week	Establishment of nursery <ul style="list-style-type: none"> - Nursery site characteristics - Factors affecting nursery location - Nursery design 	
Third week	Plant propagation <ul style="list-style-type: none"> - Propagation-need and potentialities - Sexual propagation method and its advantages and disadvantages - Asexual propagation method and its advantages and disadvantages 	
Fourth week	Seed dormancy: <ul style="list-style-type: none"> - Causes of seed dormancy - Methods of Breaking seed dormancy 	
Fifth week	The First Examination.	
Sixth week	The Nursery Growing Media <ul style="list-style-type: none"> - Types of growing media - Sterilization methods of growing media 	
Seventh week	Seedling production from the seed (Sexual propagation) <ul style="list-style-type: none"> - Nursery bed and its types - Seed sowing methods in the nursery - Deep seed sowing 	

	- Time of seed sowing	
Eighth week	<ul style="list-style-type: none"> - Seed germination - Types of seed germination - Factors affecting on germination - Steps of germination 	
Ninth week	<ul style="list-style-type: none"> - Transplanting - Hardening off 	
Tenth week	The second Examination.	
Eleventh week	<p>Vegetative propagation technics</p> <p>Reasons of Vegetative propagation</p> <p>Types of Vegetative propagation</p>	
Twelfth week	<ul style="list-style-type: none"> - Cutting and its types - Layering and its types 	
Thirteenth week	<ul style="list-style-type: none"> - Factors influencing rooting of cuttings and layering - Growth regulators (Plant hormones) and its Uses in propagation. 	
Fourteenth week	- Grafting and its types	
Fifteenth week	- Micro-propagation method	
<p>Practical Topics (If there is any)</p> <p><u>Week: 1</u></p> <p><u>Week: 2</u></p>		<p>Rushdy R. Aziz ex: (3 hrs)</p>

Week: 3

Week: 4

Week: 5

The First Examination.

Week: 6

Week: 7

Week: 8

Week: 9

Week: 10

Week: 11

Scientific trip to the Seed Laboratory in the Agriculture Research Center.

Week: 12

Examination paper 1 (pending confirmation)

Examination paper 2 (pending confirmation)

Examinations:

In regard to this subject the type of exam will be as follow:

1- Definitions:

2- Multiple Choose:

3- Use true or false for each sentence and correct false statement:

4- Fill the following blanks with the correct word:

5- Numerous these followings:

6- Explain briefly:

7- give the reasons of these followings:

20. Extra notes:

21. Peer review