

Ministry of Higher Education and Scientific research



**Salahaddin University**  
**College of Agriculture**  
**Department of Forestry**  
**Fourth Stage Students**

**Course Book: Forest Conservation-Theory & Practice**

**(Theory part), Lecturer Ph.D. Dr. Zana Abubakr Ahmed Lak**

**(Practice part) MSc. Assist. Lecturer Rushdy Rokan Aziz**

**Academic Year: Fall Semester 2024 - 2025**

## Course Book of (2<sup>nd</sup> stage forestry)

<b>1. Course name</b>	<b>Forest Conservation - Theory &amp; Practice</b>
<b>2. Lecturer</b>	<b>Ph.D. Dr. Zana Abubakr Ahmed Lak MSc. Rushdy Rokan Aziz</b>
<b>3. Department/ College</b>	<b>Forestry/Agriculture</b>
<b>4. Contact</b>	<b>E-mail: zana.ahmed @su.edu.krd Tel: 07504520548</b>  <b>E-mail: Rushdy.Aziz @su.edu.krd E-mail: rushdyrokan@yahoo.com Tel: 07736963899 / 07504886122</b>
<b>5. Time ( hours) per week</b>	<b>Theoretical: 2 hours Practical: 3 hours</b>
<b>6. Office hours</b> Ph.D. Dr. Zana Abubakr Ahmed Lak MSc. Rushdy Rokan Aziz	<i>I often present in my office from Sunday to Thursday. Sunday to Thursday</i>
<b>7. Course code</b>	
<b>8. Lecturer academic profile</b> <b>(Dr. Zana Abubakr Ahmed Lak)</b>	<p>Awarded Ph.D. Forest Ecophysiology, Department of Forest &amp; Soil, Institute of Forest Ecology ,University of Bodenkulture – Vienna - Austria in 2021. Awarded MSc. in Forest Protection, Forestry Department, Agriculture College, University of Salahaddin - Erbil, Kurdistan region government in 2007. Awarded B.Sc plant production college of Agriculture Salahaddin University in 2003. Took baccalaureate, Sheikh Mahmoud Hafid Secondary School in 1999.</p> <p>Demonstrator at the Department of Plant Production, Salahaddin University in 2004.. Assist. Lecturer, Plant Production Department, College of Agriculture, Salahaddin University in 2007 – 2013. Lecturer, Department of Forestry, College of Agriculture , Salahaddin University 2014 – 2022. Teaching staff member (Assistant Lecturer), Plant Production, College of Agriculture, Salahaddin University in 2007 – 2014. ( Lecturer), forestry, College of Agriculture, Salahaddin University in 2014 – 2015.</p> <p>Publishing (8) papers in journal, Agri. Sci. Basrah University, Agri. Sci. Journal Kirkuk University, Sci. Jour. Raparen Uni., Journal Plant &amp; Soil Austria, Forests IMDB Journal Switzerland. Participated in Scientific Conference of Plant Protection Beirut-Lebanon (2009). Participated in Scientific Conference of Mediterranean plant Pathology Rome-Italy (2010). Participated in workshop of Compact Desertification, Vienna Austria (2017). Participated in workshop of geo science and satellite data, Vienna (2016). Participated in workshop of mountain Forestry Conservation, Vienna (2018). Participated in workshop of Biodiversity, Vienna (2019).</p>

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<b>(MSc. Rushdy Rokan. Aziz)</b>	I completed my <b>(B.Sc.)</b> in Salahaddin University - Erbil, Iraq – Agriculture College - Department of Plant Production in 2007. I got my <b>(M.Sc.)</b> in Salahaddin University - Erbil, Iraq – Agriculture College - Forestry Department in 2015 and my specialize is Silviculture. I am working as Assist Lecturer in Salahaddin University, Erbil, Iraq – Agriculture College, Forestry Department in 2016.
<b>9. Keywords</b>	Forest Conservation, Forest health & Protection, Forest Services, Afforestation & Reforestation.
<b>10. Course overview:</b> <b>➤ Theoretical Part:</b> <p>This Course is about Forest Conservation, Forest conservation is the <b>practice of planting and maintaining forested areas for the benefit and sustainability of future generations</b>. The importance of forests cannot be underestimated. We depend on <b>forests for our survival</b>, from the air we breathe to the wood we use. Besides providing habitats for animals and livelihoods for humans, forests also offer watershed protection, prevent soil erosion and mitigate climate change. <b>To protect forests from uncharacteristic and economically or environmentally undesirable wildfire, pests, diseases, and other damaging agents and thus maintain and improve long-term forest health and productivity</b>. Long-term Forest and Soil Productivity. To protect and maintain long-term forest and soil productivity.</p> <b>➤ Practical Part:</b> <p>Forests are the main source of many products and the most important wood as a raw material used in many important industries such as the production a major forest in addition to the benefits of other important preventive regard to the maintenance of soil and water sources, and because of increased Forest areas in the world and the problems of Air pollution due to emissions from factories, cars and increasing problems climate change, drought and desertification in the world, Moisture Extremes Fires inside the forest and Heat injury and Freezing ,we study the Forest Conservation Science and how to manage and control the Injuries.</p>	
<b>11. Course objective:</b> <b>➤ Theoretical Part:</b> <p>should conserve forests and <b>wildlife to preserve biodiversity to prevent endangered species from becoming extinct</b>, and to maintain ecological balance in nature.</p>	

**Aims and Objectives:**

- a- Protection and conservation of flora, fauna, forests and wildlife.
- b- Afforestation and regeneration of degraded areas and
- c- Protection of environment in order to promote sustainable development.

**➤ Practical Part:**

**Objectives of the course:**

- 1 - Familiarity with the student process of Forest Conservation and tactics.
- 2 - Get the most important forest Conservation projects in the province.
- 3 - A comparative study of the state of forests in natural and artificial regions.
- 4- Learn how to create windbreaks and selection of tree species suitable for the establishment and the environmental benefits of Governorate.

**12. Student's obligation**

**➤ Theoretical Part:**

Students are required to attend at the class, Lectures, Field camp and two exams in the semester in Forest Conservation theoretical part.

**➤ Practical Part:**

Students are required to conduct two exams in spring semester in forest conservation practical part.

**13. Forms of teaching**

**➤ Theoretical & Practical Part:**

Direct method following for teaching with student. All lectures will be explained by using PPT. Software with connecting to projector. White board will be used for more explanation. A copy of hand out will give to the students to write their notes.

**14. Assessment scheme**

**➤ Theoretical Part:**

Quiz will be conducted every lecture with giving 5 minutes to the students. The sum of two exams will be out of (10) marks and (5) marks for Actives and quizzes. The final exam will be out of (50) marks.

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First Exam	Second Exam	Quiz,activity and Report	Annual Average	Final Exam	
5	5	5	15	50	<b>Theory part</b>

### ➤ Practical Part:

They also require bringing a report in this semester. All students should be presented in the lab. Quiz will be conducted every lectures with giving 5 minutes to the students. The sum of two exams will be out of (30), 15 marks for each exam and (5) marks for Actives. With no final exam .

First Exam	Second Exam	Quiz,activity and Report	Annual Average	Final Exam	
15	15	5	35	No exam	<b>Practice part</b>

### 5. Student learning outcome:

#### ➤ Theoretical & Practical Part:

The student should get the scientific information about forest Conservation. The student should learn the effect **planting and maintaining forested areas for the benefit and sustainability of future generations**. ... Forest conservation involves the upkeep of the natural resources within a forest that are beneficial to both humans and the environment.

### 16. Course Reading List and References:

Edmonds,R.L. james K. Agewe & Robert I. Gara .(2012). Forest Health and Protection,University of Washington,Waveland Press.

Kimmins,J.P. (2004) forest ecology. Prentic Hall. New jersey

Robert and R.Gara.(2011) Forest health. Wave land press Illinois.

Shukla R. and chand& company LTD.

E. Röhrig, N. Bartsch (2016). Waldökologie: Einführung für mitteleuropa. Springer,Germany, Berlin.

E. Pedro. Forest conservation, methods, management and challenges (2019). environmental research advances forestry, Nova publisher. Brazil.

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17. Theoretical Topics	Lecturer's name
<p><b>Week 1: Forest Conservation: (2hr)</b></p> <p><b>Definitions, Importance of forest conservation, why forest disappear, forest conservation methods, healthy forest.</b></p> <p><b>Week 2: Forest conservation methods: Cutting; regulate and plan. (2hr)</b></p> <p><b>Week 3: Forest conservation methods: Forest fires; ecological impact &amp; control.</b></p> <p><b>Forest fire types, management, Control fire. (2hr)</b></p> <p><b>Week 4: Forest conservation methods: Overgrazing? Impact on natural regeneration, effect on forest stems and bark, control. (2hr)</b></p> <p><b>Week 5: Forest conservation methods: Reforestation &amp; Afforestation</b></p> <p><b>Planting trees methods. (1hr) + (1hr) first exam</b></p> <p><b>Week 6: Forest conservation methods; How to protect Forest Biodiversity.</b></p> <p><b>Protect habitat, reduce fragmentation, reduce introduced animal or plants.</b></p> <p><b>Week 7: Forest conservation methods; Forest Abiotic stress.</b></p> <p><b>Drought, precipitation, effect of ecological stress on pest invasive.</b></p> <p><b>Week 8: Forest conservation methods: Air Pollution</b></p> <p><b>Week 9: Forest conservation methods: Soil conservation</b></p> <p><b>Week 10: Governmental role in forest conservation. Rules and educate people how to conserve forest. (1hr) + (1hr) second exam.</b></p>	<p><b>Dr. Zana Abubakr Ahmed Lak (2 hrs)</b></p>

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<b>Practical Topics</b>	
<b>Week:1; (3hr) Injures caused by Temperature extremes, Definition of heat and temperature , High temperature cause plant injuries , Low temperature cause plant injuries , Resistant trees to high-temperatures , Intermediate trees to high-temperatures , Non-resistant trees to high-temperatures.</b>	MSc. Rushdy Rokan Aziz (3 hrs)
<b>Week: 2; (3hr) Injures caused by moisture extremes, Low and high moisture stress, Drought (Minimum Moisture), Symptoms of drought stress, Some possible solutions to treatment of low moisture, Flooding (Maximum Moisture), Silvicultural practice in waterlogged areas, Trees that tolerant to low moisture, Trees that require high moisture, Trees that tolerant semi-moisture.</b>	
<b>Week: 3 ; (3hr) Injuries caused by Air Pollution, Air pollutants , Air pollution sources, Response of stem growth to pollutant, The effects of air pollutants on stem growth, Effects of Acid precipitation, Conceptual model of the effect of air pollutant on stem growth, Management of air pollution Problems.</b>	
<b>Week: 4 ; (3hr) Definition of Forest Fires, The elements of fire behaviour, Major phase of Combustion process, Predicting tree mortality from fire, Methods of prevention, Forest Fire Classification, Control Methods of Forest fire, The most important causes to forest fire.</b>	
<b>Week: 5; (1hr) 1<sup>st</sup> exam + (2hr) Nutrient Deficiencies, Major function of elements , Macronutrients, Micronutrients, Typical nutrient deficiency symptoms in foliage.</b>	
<b>Week: 6 ; (3hr) damages by Animals in Forests, There are various features of this group, Seed Eaters, Voles, Deer, Tree Squirrels, Pocket gophers, Mountain beavers, Snowshoe hares, Livestock, Control strategies for deceasing damage.</b>	
<b>Week: 7 (3hr) Pests in a Forest.</b>	
<b>Week: 8 (3hr) Protecting of forests from human actions.</b>	
<b>Week: 9 (full day) Visit Safeen mountain natural forest.</b>	
<b>Week: 10 (3hr) Scientific trip to Khanzad plantation.</b>	
<b>Week: 11 (3hr) Scientific trip to sami abdul Rahman Park.</b>	
<b>Week: 12 (3hr) <i>Second Examination</i></b>	

**18. Examinations:**

**➤ Theoretical Part:**

- 1-Definitions.
- 2- Multiple choices.
- 3- Correct the underlined parts if they are falls.
- 4- Write the reason to the following statements.

**➤ Practical Part:**

**Type of examination Questions:**

Type of examination Questions:

1 -Definitions:

e.g.: Winter damage , Fire suppression, Forest fires, Temperature

2 -Advantage:

e.g :.

3 -Sign true or false for each sentence and correct the false word.

4 -Fill the following blanks with the correct word.

5 -Write about

e.g: symptoms, management practices, plant resistance

6 -Answer below statements.

1-Silvicultural practice in flooded areas

2-Management of air pollution Problems.

7 -Write the reason of (radiation temperature inversion).

8 -Write your notes about our first trip.

9 -Enumerate the following

1-Air pollution sources

2-The most important causes to forest fire

10 -Write Scientific name for each of the following. (Only one example)

-Resistant trees to high-temperatures



*Pinus brutia*

11 -Multiple choices

-Low temperature injuries fall into categories:

a- early frost      b-Winter damage      c- late frosts

**20. Extra notes:**

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enter the course book with his/her valuable remarks.

**21. Peer review:** پيدا چووننه ودي هاوهن

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book writing few sentences in this section.

*(A peer is person who has enough knowledge about the subject you are teaching; he/she has to be professor, assistant professor, a lecturer or an expert in the field of your subject).*

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