Debre Markos University

College of Agriculture and Natural Resources

Department of Horticulture

Course outline

Course Title and No.: subtropical and temperate fruit Crops Production and Management

Course Code: HORT2122

Credit Hour: 2

ECTS: 3

Academic Year: 2020, Semester: II

Target students: 2rd year Hort.

Instructor: Yohannes Gelaye (M.Sc.) **Email: hort0483@gmail.com**

Course Description

Status, prospect and challenges of sub-tropical and temperate fruit crops production in Ethiopia Origin and distribution of major subtropical and temperate fruits, economic importance, nutritional use , detailed study on botany and morphology, variety/cultivars, propagation methods, ecological and cultural requirements, pollination nature, harvesting and post-harvest handling, storage and major pest and disease of major subtropical fruits such as Citrus fruits, Avocado and Passion fruit and temperate fruits such as : Grape, Apple, Peach, Plum and Strawberry and minor fruits and nuts such as: Bullocks heart, Loquat, Date palm, Macadamia and other nuts.

Objectives

At the end of the course, students will able to:

- Understand the economic and social values of subtropical and temperate fruit crops production in Ethiopia and their distribution in the country
- Understand the prospect and challenges of subtropical and temperate fruit crops production in Ethiopia
- Describes the botany, varieties and nutritional and medicinal values of major subtropical and temperate fruit crops
- Describe propagation techniques of major subtropical and temperate fruit crops in Ethiopia
- Select and identify ecological requirements of major subtropical and temperate fruit crops
- Implement subtropical and temperate fruit crops integrated fertilization and pest management that is environmentally friendly
- Plan and implement harvesting and post-harvest handling of subtropical and temperate fruit crops for

effective minimization of loss

PREREQUISITES: Basic in Horticultural Sciences

COURSE CONTENTS

CHAPTER 1. INTRODUCTION (2 hrs.)

Chapter objectives

After studying this section, students are expected to:

- ☛ Explain the importance of subtropical and temperate fruits production in Ethiopia
- ☛ Describe the present status and future potential of subtropical and temperate fruits production in Ethiopia
- ☛ Identify the problems associated with sub-tropical and temperate fruit production in Ethiopia

Chapter contents

1.1 Importance of subtropical and temperate fruit production in Ethiopia

1.2 Present status and future potential of subtropical and temperate fruit production in Ethiopia

1.3 Problems associated with sub-tropical and temperate fruit production in Ethiopia.

CHAPTER 2. Citrus fruit production and management

2hrs

Chapter objectives

After completing this chapter, students will be able to:

⇨ Identify the origin, distribution, composition and use of citrus fruit

⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of citrus fruit.

Chapter Contents

2.1 Origin and distribution
2.2. Composition and use
2.3. Botany and morphology
2.4. Cultivars
2.5. Ecological requirement
2.6. Pollination
2.7. Cultural practices/crop husbandry
2.8. Harvesting and post-harvest handling
2.9. Pests of citrus

Assessment 1	1hr

CHAPTER 3. Avocado fruit production and management

2hrs

Chapter objectives

After completing this chapter, students will be able to:

⇨ Identify origin, distribution, composition and use of avocado fruit

⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of avocado fruit.

Chapter Contents

3.1. Origin and distribution
3.2. Composition and use
3.3. Botany and morphology
3.4. Cultivars
3.5. Ecological requirement
3.6. Pollination
3.7. Cultural practices/crop husbandry
3.8. Harvesting and post-harvest handling
3.9. Pests of avocado
Assessment 2

1 hr.

CHAPTER 4. Apple production and management

2hrs

Chapter objectives

After completing this chapter, students will be able to:

⇨ Identify origin, distribution, composition and use of apple fruit

⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of apple fruit.

Chapter Contents

4.1. Origin and distribution
4.2. Composition and use
4.3. Botany and morphology
4.4. Cultivars
4.5. Ecological requirement
4.6. Pollination
4.7. Cultural practices/crop husbandry

4.8. Harvesting and post-harvest handling 4.9. Pests of apple **Assessment 3**	**1 hr.**

CHAPTER 5. Grape production and management **Chapter objectives** **After completing this chapter, students will be able to:** ⇨ Identify origin, distribution, composition and use of grape fruit ⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of grape fruit. **Chapter Contents** 5.1. Origin and distribution 5.2. Composition and use 5.3. Botany and morphology 5.4. Cultivars 5.5. Ecological requirement 5.6. Pollination 5.7. Cultural practices/crop husbandry 5.8. Harvesting and post-harvest handling **5.9.** Pests of grape	2hrs

CHAPTER 6. Peach and plum production and management

3hrs

Chapter objectives

After completing this chapter, students will be able to:

⇨ Identify origin, distribution, composition and use of Peach and plum fruit

⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of Peach and plum fruit.

Chapter Contents

CHAPTER 7. Other minor subtropical and temperate fruits **Chapter objectives** **After completing this chapter, students will be able to:** ⇨ Identify origin, distribution, composition and use of other minor subtropical and temperate fruits ⇨ Understand the botany, morphology, cultivars, ecological requirements, pollination, cultural practices, harvesting and postharvest handling and pests of other minor subtropical and temperate fruits fruit. **Chapter Contents** 7.1. Bullock's heart 7.2. Strawberry 7.3. Loquat 7.4. Date palm 7.5. Macadamia nut	2hrs
Final examination (50%)	**As per registrar schedule**

Mode of delivery

- ✡ Interactive lecture
- ✡ Discussion
- ✡ Questioning and answering
- ✡ Assignments and presentation and
- ✡ Study trip
- ✡ Discussion
- ✡ Questioning and answering
- ✡ Assignments and presentation and
- ✡ Practical work

Mode of assessment

✡ Practical report ✡ Tests ✡ Final Exam

	PRACTICAL SESSIONS	Hours
1.	Identification of subtropical and temperate fruit trees crops grown in Ethiopia	6hrs
2.	Demonstration of subtropical and temperate fruit crops propagation by seed, cutting, budding, grafting	6hrs
3.	Demonstration of procedures involved in preparation of planting material (seed and vegetative propagules of subtropical and temperate fruit crops)	6hrs
4.	Demonstration of training and pruning techniques/ procedures of citrus and other selected subtropical and temperate fruit trees	6hrs

5. Demonstration of harvesting, grading and packing of subtropical and temperate fruit	6hrs
6. Demonstration of fertilizer application techniques and irrigation methods of subtropical and temperate fruit crops	6hrs
7. Demonstration of common cultural practices such as: weeding, mulching, propping, etc.	6hrs
8. Demonstration of different lab equipment used for maturity determination such as refract meter, penetrometer etc.	6hrs
9. Field visit to Melkasa Agricultural Research Center, upper Awash Agro-industry	9hrs

Total Assessment Methods

Assessment methods	**Allotted marks in %**
First assessment	10
Second assessment	10
Third assessment	10
Assignment	10
Lab/Practical assessment	10
Final assessment	50
Total	**100%**
Grading: Fixed scale	

4. COURSE POLICY

All students are expected to abide by the code of conduct of students of the University throughout this course.

- Switch off Mobile Phones during any activity; chewing gum is forbidden; being late more than one minute is unacceptable; during lecture hours, noise is forbidden; in case of inconvenience, inform ahead of time, 90% lecture and 100% practical session participation is mandatory

5. REFERENCES

All relevant and up to date text books, journals, teaching materials, research findings, internet and library sources related to the course and the context of the country are the accepted references